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# UNIVAC

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PRODUCT INFORMATION

DEFENSE SYSTEMS DIVISION

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# PRODUCT INFORMATION

1-72

## UNIVAC EQUIPMENT MANUALS

<u>Product</u>	<u>Name</u>	<u>Serial Number</u>	<u>PX #</u>
1004	Digital Computer Fundamentals		4182-0-3
	UNIVAC Computer-To-Computer Communication		6609
	1994 Card Processor Maintenance Study Guide		4777-0-2
1212	642B Diagnostics, Volume I		3522-1-1
	642B Diagnostics, Volume II		3522-2-1
	642B Diagnostics, Volume III		3522-3-1
	642B Maintenance Study Guide		3793-0-2
	642B Programming Study Guide		3941-0-1
	642B Technical Manual, Volume I		4688-1-1
	642B Technical Manual, Volume II		4688-2-1
1218	1218 Diagnostics		3348-0-1
	1218 Diagnostics		3349-0-1
	1218 Computer, Volume I	1-114	3639-1-1
	1218 Computer, Volume II	1-114	3639-2-1
	1218 Computer, Volume I	115 & up	3639-1-2
	1218 Computer, Volume II	115 & up	3639-2-2
	1218 Programming Study Guide		3818-0-2
	1218 Maintenance Study Guide		3942-0-1
	1218 Diagnostics, Volume I		3929-1-1
	1218 Diagnostics, Volume II		3929-2-1
1219	1219A Computer, Volume I	10, 11 & 13	3316-1-3
	1219A Computer, Volume II	10, 11 & 13	3316-2-3
	1219 Diagnostics, Volume I	1-11 & 13	3520-1-2
	1219 Diagnostics, Volume II	1-11 & 13	3520-2-2
	1219 Maintenance Study Guide	1-11 & 13	3814-0-1
	1219 Programming Study Guide	1-11 & 13	3943-0-2
	1219 Programming Study Guide		3943-0-3
	1219B Computer, Volume I		4682-1-2
	1219B Computer, Volume II		3682-2-2
	1219B Maintenance Study Guide		5057-0-1
	1219B Diagnostics, Volume I		4637-1-1
	1219B Diagnostics, Volume II		4637-2-1
	1219B Diagnostics, Volume III		4637-3-1
1230	1230 Computer, Volume I		3762-1-3
	1230 Computer, Volume II		3762-2-3
	1230 Programming Study Guide		3944-0-2
	1230 Maintenance Study Guide		3992-0-1
	1230 Diagnostics, Volume I		4272-1-2
	1230 Diagnostics, Volume II		4272-2-2
	1230 Diagnostics, Volume III		4272-3-2
	1230 Diagnostics, Volume IV		4272-4-2
	1230 W/FP Diagnostics, Volume I		4418-1-1
	1230 W/FP Diagnostics, Volume II		4418-2-1
	1230 W/FP Diagnostics, Volume III		4418-3-1
	1230 W/FP Diagnostics, Volume IV		4418-4-1

## UNIVAC EQUIPMENT MANUALS (Continued)

<u>Product</u>	<u>Name</u>	<u>Serial Number</u>	<u>PX #</u>
1230 (Cont.)	1230 Technical Manual W/FP, Volume I		4692-1-1
	1230 Technical Manual W/FP, Volume II		4692-2-1
	1230 Technical Manual W/EMU, Volume I		4721-1-1
	1230 Technical Manual W/EMU, Volume II		4721-2-1
	1230 Diagnostics W/EMU, Volume I		4929-1-1
	1230 Diagnostics W/EMU, Volume II		4929-2-1
	1230 Diagnostics W/EMU, Volume III		4929-3-1
	1230 Diagnostics W/EMU, Volume IV		4929-4-1
ARTS III	ARTS III Technical Manual, DPS Preliminary		5895-0-1
	ARTS III Technical Manual, IOP, Volume II		5896-2-2
	ARTS III Technical Manual, Memory Unit, Volume I		5897-1-2
	ARTS III Technical Manual, Memory Unit, Volume II		5897-2-2
	ARTS III Technical Manual, DPS & PS		5898-0-2
	ARTS III Technical Manual, DPS & PAM		5899-1-2
AN/UYK-7	AN/UYK-7 Technical Manual	A36	6423-0-2
	AN/UYK-7 Technical Manual	A9,A11,A16	6131-0-2
	AN/UYK-7 Technical Manual	A30,A38,A54)	6509-0-2
1259	1259 Teletypewriter		3379-0-2
	1259 30-Bit Maintenance Tests		3721-0-2
	1259 18-Bit Maintenance Tests		4271-0-1
1206 TTY	Teletypewriter		2729-0-2
	Teletype Bulletin 215B		3865-0-1
	Teletype Bulletin 1154B		3866-0-1
	Teletype Bulletin 281B, Volume I		3869-1-1
	Teletype Bulletin 281B, Volume II		3869-2-1
	Teletype Bulletin 270B, Volume I		3870-1-1
	Teletype Bulletin 270B, Volume II		3870-2-1
	Teletype Bulletin 270B, Volume III		3870-3-1
	Teletype Bulletin 1201B		4423-0-1
	Teletype Bulletin 295B		4424-0-1
1240	1240 Magnetic Tape Unit, Volume I	1-62	2810
	1240 Magnetic Tape Unit, Volume II	1-62	2810
	1240 18-Bit Maintenance Tests		3524-0-2
	1240 Magnetic Tape Unit, Volume I	63-120	3640-1-1
	1240 Magnetic Tape Unit, Volume II	63-120	3640-2-1
	1240 Magnetic Tape Unit, Volume I	121 & up	3640-1-2
	1240 Magnetic Tape Unit, Volume II	121 & up	3640-2-2
	1240 Maintenance Study Guide		3946-0-1
	1240 Diagnostics, Volume I		4420-1-2
	1240 Diagnostics, Volume II		4420-2-2

## UNIVAC EQUIPMENT MANUALS (Continued)

<u>Product</u>	<u>Name</u>	<u>Serial Number</u>	<u>PX #</u>
1243	1243 30-Bit Maintenance Test		4527-0-1
	1243 Magnetic Tape Unit, Volume I		4933-1-1
	1243 Magnetic Tape Unit, Volume II		4933-2-1
1538	1538 I/O Console Technical Manual		5005-0-2
	Digitronics Perforated Tape Reader, Model 2500		3871-0-1
	Teletype High Speed Tape Punch		3865-0-1
	Teletype, Parts, High-Speed Tape Punch		3866-0-1
	Teletype Motor Units		4424-0-1
1540	1540/1541 Magnetic Tape Unit, Volume I		3334-1-4
	1540/1541 Magnetic Tape Unit, Volume II		3334-2-4
	1540 30-Bit Maintenance Tests		3645-0-2
	1540/1541 18-Bit Maintenance Tests		3644-0-1
	1540/1541 Maintenance Study Guide		3947-0-1
1616	1616 Technical Manual, UNIVAC Digital Data Computer, Volume I		6483-1-1
	1616 Technical Manual, UNIVAC Digital Data Computer, Volume II		6483-2-1
1840	1840 Magnetic Tape Set Technical Manual, Volume I		6573-1-1
	1840 Magnetic Tape Set Technical Manual, Volume II		6573-2-1
	Technical Manual TIPI-II, 1840 Magnetic Tape Transport, Volume I		6347-1-1
	Technical Manual TIPI-II, 1840 Magnetic Tape Transport, Volume II		6347-2-1
DEAC (OJ-172(V)/ UYK	OJ-172 Technical Manual, Volume I NAVSHIPS	0967-323- 3010	6641-1-1
	OJ-172 Technical Manual, Volume II NAVSHIPS	0967-323- 3020	6641-2-1
1840	Modular Magnetic Tape Transport, Volume I		8122-1-3
	Modular Magnetic Tape Transport, Volume II		8122-2-3
	Modular Magnetic Tape Set Type 1840, Volume I		
	Modular Magnetic Tape Set Type 1840, Volume II		
1560	1560 Magnetic Tape Unit, Volume I		4917-1-1
	1560 Magnetic Tape Unit, Volume II		4917-2-1
	Potter M906 II-1 Tape Transport (1240)	1-120	3872-0-1
	Potter M906-II-2 Tape Transport (1240)	121 & up	3872-0-2
	Potter MT-120A Tape Transport		3873-0-1
	Potter SC-1150(M) Tape Transport		3874-0-1
	Ampex TM-12R Tape Transport		3875-0-1

## UNIVAC EQUIPMENT MANUALS (Continued)

<u>Product</u>	<u>Name</u>	<u>Serial Number</u>	<u>PX #</u>
1469	1469 High Speed Printer		2577-0-1
	1469 30-Bit Maintenance Test		4128-0-1
1549	1549 CRPI, Volume I		5007-1-1
	1549 CRPI, Volume II		5007-2-1
	SOROBAN Manual for RPI (Part for CRPI Manual)		
1551	1551 Alphanumeric Display Unit		4537-1-1
1569	1569 High-Speed Printer		5008-0-1
	Data Products Manual for 1569		
	Analex Series 4-1000A Printer		3877-0-1
	1569 Technical Manual (7036900-00)		3748-0-1
	1569 Technical Manual (7036900-01)		
	Supplement		4085-0-2
	1569 Technical Manual (7036900-02)		
	Supplement		4665-0-1
1299	1299 Interconnection Panel		3123-0-2
1387	KATO Motor Generator Type 1387		3876-0-1
1392/1394	1392/1394 Motor Generator		3382-0-1
	Systems Monitoring Panel		4858-0-1
AN/UYK-15	Technical Manual for 1616 Militarized Computer, Volume 1		6598-1-1
	Technical Manual for 1616 Militarized Computer, Volume 2		6598-2-1

## SOFTWARE DOCUMENTS

<u>Computer</u>	<u>Name</u>	<u>PX #</u>
1218	1218, Programmers Reference Manual 1218, Programmers Study Guide	2810C 3818-0-2
1219	1219, Programmers Reference Manual 1219, Programmers Study Guide The ULTRA/18-1 Assembler User's Manual and Programmers Reference Manual 1219B Programmers Reference Manual	3288 3943-0-2 4901 4939
1218/1219	SYCOL for 1218/1219 FORTRAN for 1218/1219	4171 4165
1206	The SYCOL Programming Language for 1206 The SYMON Monitor The LIBIN Librarian and Corrector The SYMON Monitor Operating Procedures	3831 3829 3832 3838
1212	1212, Compiling System Manual 1212, Operating and Support Manual 1212, Programmers Reference Manual The SYCOL Programming Language for 1212 The SYMON Monitor The LIBIN Librarian and Corrector	3893 3894 3895 4065 3829 3832
1212 (642B)	642B Programmers Study Guide	3941-0-1
1206/1212/ 1230	The SYCOL Programming Language The FORTRAN Programming Language for SYMON	3830 4733
1212/1230	SYCOL Flow Chart The SYCOL 30-Bit Computer Programming Language	4643 5613
1230	1230, Compiling Systems Manual 1230, Operating and Support Manual 1230, Programmers Reference Manual The SYMON Monitor Operating Procedures with Expanded Memory Programmers Study Guide The SYMON Monitor The LIBIN Librarian and Corrector The SYMON Monitor Operating Procedures for the UNIVAC 1230 The SYCOL Programming Language for 1230 with Hardware Floating Point The FORTRAN IV Programming Language	3890 3891 3892 4546 3944-0-1 3829 3832 3838-1 4431 4741
M642B	The SYCOL Programming Language for M642B with Expanded Memory	4430

# SOFTWARE DOCUMENTS (Continued)

<u>Computer</u>	<u>Name</u>	<u>PX #</u>
1230 MTC	Support Software User's Manual for RTS Library of Functional Description for the 1230 MTC Baseline Support Software	4554  5000
1830B	SYMON Monitor for 1830A Modified Computers SYCOL Programming Language, 1830A Modified Diagnostic Manual for 1830B, Volume I Diagnostic Manual for 1830B, Volume II SYMON Monitor Operating Procedures 1212 and 1230 Computers	6107 6054 6619-1-1 6619-2-1  4663
AN/UYK-7 and S-3A Data	ULTRA/32 Macro Assembly System User's Manual	5977
AN/UYK-7	ULTRA/32 Macro Assembly System CMS-2 User's Reference Manual , Volume 1 CMS-2 User's Reference Manual, Volume 2 NAVSHIPS 0967-028-0060 CMS-2 Programmer's Manual NAVSHIPS 0967-028-0070	5449 6240   6555
ARTS III	ARTS III Support Software SIR-CINOS , Volume 1 ULTRA Assembler, Volume 2 Emulation Package, Librarian, Loader Utility, Vol. 3 ARTS III Support Software User's Manual	 6194, 6194 6194 6196
CMS-2	CMS-2 Study Guide	6346-0-1
1616	1616 Level 1 Support Software Users Handbook 1616 Level 1 Support Software Design and Maintenance Manual	6626  6639

# PRODUCT INFORMATION

## COMPUTER BOOTSTRAPS AND EQUIPMENT CONFIGURATIONS

Every stored program computer must be equipped with some facility to load into its memory those operating programs that are to be executed for any processing job. The philosophy of computer design dictates the method by which this is accomplished. During the evolution of computers throughout their history, methods varying from simple hardware initiation of a direct input to memory (of a load routine) from an outside source to sophisticated dynamic program construction initiated by a simple micro instruction, have been used. The Non-Destructive Read Out (NDRO) type of initial input routine has been adapted for UNIVAC® Military Computers in recent years. The term "BOOTSTRAP" has been applied to this NDRO initial input routine. The Bootstrap is used for initial program loading or for operating program reload in conjunction with the automatic recovery feature designed into the computers. Upon encountering a program fault this automatic recovery feature forces the computer into the wired initial input routine (Bootstrap) that reloads an operating program segment which, in turn, recovers and reinitiates the main program at a planned "restart" point.

The bootstrap loads a short "program load routine" into memory and then transfers computer control (by a jump instruction) to that program segment which then loads the balance of the program and checks the validity of the program load.

Instructions and constants are contained within a given Bootstrap memory in UNIVAC Military computers which feature NDRO Bootstrap. Certain UNIVAC computers feature two separate Bootstraps routines with selection determined by a switch position.

Design and Programming the NDRO Bootstrap memory is accomplished at the time of manufacture. The actual program is dependent on the type of input equipment the Bootstrap is intended to control, the mode of equipment operation and the computer channel to which the input device is connected. The format of the Bootstrap program affects not only the wiring of the Bootstrap assembly, but also dictates the format of the program load routine and diagnostic memory test.

In order to prevent delays in delivery of hardware and compatible software, timely definition of Bootstrap requirements and equipment configuration is necessary. A BOOTSTRAP ORDERING INFORMATION FORM for specific computer types and EQUIPMENT CONFIGURATION CHECK LISTS have been prepared for this purpose. In addition, a matrix listing Bootstrap assemblies that are currently available at no extra cost is prepared and will be updated periodically to include new Bootstrap assemblies. The ordering form and listing for UNIVAC computers are attached to each computer description.

Customers or UNIVAC personnel responsible for definition must be informed of the need to order a Bootstrap with a computer. The appropriate Bootstrap ordering information form and configuration check lists should be completed in detail by cognizant personnel and submitted to Marketing Services, Eagen Plant, where the information can be disseminated to departments concerned.

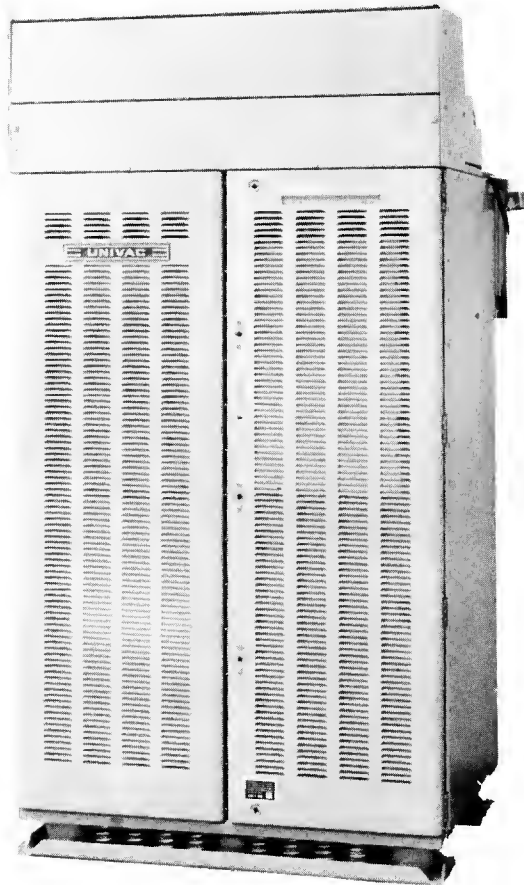


# PRODUCT INFORMATION

## UNIVAC 1212 MILITARY COMPUTER (CP-642B/USQ-20(V))

PX 3224

The UNIVAC 1212 (CP-642B) is a 1962 design advancement, over the 30-bit 1206 (CP-642A) Computer, that introduces the use of control memory (2/3 microsecond magnetic thin film) and a minus 3 volt (N3) I/O interface. These features increased transfer rates to 125 K words per channel. Two interface voltages and two types of I/O control chassis are offered as options. Any channel of a Type II Chassis can be used for intercomputer communication and peripherals whereas the Type I Chassis are used for peripherals only.



### FUNCTIONAL CHARACTERISTICS

#### 30-BIT WORD LENGTH Half-Word Option

#### MEMORY

- Magnetic Core Main Memory
  - 16K, 32K Words
  - 4-Microsecond Cycle Time
- NDRO Memory (Bootstrap)
  - 2 Programs (32 Words Each)
- Magnetic Thin-Film Control Memory
  - 64 Words
  - 667-Nanoseconds Cycle Time

#### SEVEN INDEX REGISTERS (15 Bits) Located in Control Memory

#### INSTRUCTIONS

- 62 Single Address Instructions
  - 15 Logical
  - Square Root Instruction
  - Branching Possible on Most

#### ARITHMETIC

- One's complement, subtractive

#### REPRESENTATIVE OPERAND LENGTH 15 or 30 Bits

#### FIXED POINT EXECUTION TIME

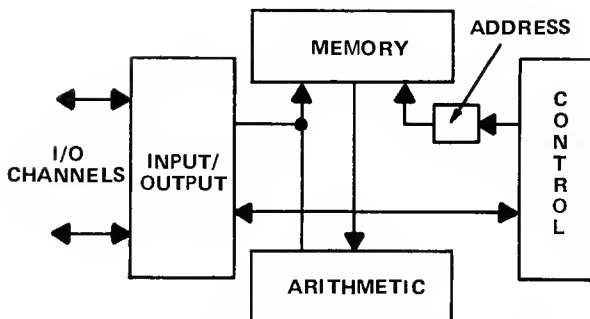
C = A + B, Store C	24 $\mu$ sec
C = A - B, Store C	56-72 $\mu$ sec
C = A / B, Store C	80 $\mu$ sec

#### REAL TIME CLOCK

(Time Increment of 1/1024 Second)

#### INPUT/OUTPUT CAPABILITIES (Buffered)

- 4, 8, 12 or 16 I/O Channels
- Automatic Priority Determination



FUNCTIONAL DIAGRAM

#### Interface

Transfer rate  
words/second

Single Channel

Multi Channel

	N3	N15
Single Channel	125K	41K
Multi Channel	250K	125K

## PHYSICAL CHARACTERISTICS

### CONSTRUCTION

A solid welded aluminum main frame contains pull out drawer assemblies of printed circuit cards, memory stacks, and other discrete components that are all accessible from the front of the computer. Diode-transistor logic circuits are mounted on 15 pin circuit cards that are low cost throw away modules in case of malfunction.

The following specifications were used as a guide for the design and construction of the 1212 (CP-642B).

General Electronic Equipment . . . . . MIL-E-16400D (3)  
(Reliability, Simplicity, Material, Workmanship, Production and Central Inspection, Ease of Operation and Maintenance)

Enclosure . . . . . MIL-STD-108D  
Technical Manual . . . . . MIL-M-16616 (1)  
Drawings . . . . . MIL-D-70327 (1)  
Preparation for Delivery . . . . . MIL-E-17555  
Radio Interference . . . . . MIL-I-16910A (2)  
Vibration . . . . . MIL-STD-167

Operating Temperature: 0° to 50°C

#### Cooling:

Water — 6.3 gallons/minute at 70°±5°F

Air — approximately 650 cfm at 80°F max. input

Water cooled, shock mounted:

Size — 72"H x 38"W x 37"D

Weight — 2400 pounds

Air cooled, solid mounted:

Size — 71"H x 38"W x 38"D

Weight — 2400 pounds

#### Power:

Water

115V, 3 phase, 400 Hz, 2.5 KW (Regulated)

115V, 3 phase, 400 Hz, 625 W (Unregulated)

Air

115V, 3 phase, 400 Hz, 2.5 KW (Regulated)

115V, 1 phase, 400 Hz, 300 W (Unregulated)

#### Reliability:

MTBF of 1500 Hours (Calculated)

Design Specification DS 4654

Acceptance Specification DS 4655

Technical Description 3224A

Product Line Manuals (PX):

<u>EQUIPMENT SERIAL NUMBER</u>	<u>TECHNICAL</u>	<u>DIAGNOSTIC</u>	<u>PROGRAMMING</u>	<u>MAINTENANCE</u>
1 thru 4	3290 (4)			
5 thru 19	3290-X-1 (4) 3291-X-2 (2)	3522-X-1 (3)	3941-0-1	3793-0-2
20 and up	4688-X-1 (2)	3522-X-1 (3)	3941-0-1	3793-0-2

Outline and dimensional drawing:

AIR COOLED — 7025066

WATER COOLED — 4055104

# PRODUCT INFORMATION

## UNIVAC 1213 MILITARY COMPUTER (SPECIAL) (CP-808(V) TYK)

PX 3224

The UNIVAC 1213 (CP-808) Computer is a physically modified 1212 (CP-642B) Computer to decrease its weight for installation in air transportable helihuts. Its functional characteristics are exactly the same as the 1212 but is limited to 12 I/O Channels (one I/O Chassis is not installed). Light weight doors and skins are used for the enclosure and the unit is air cooled only.

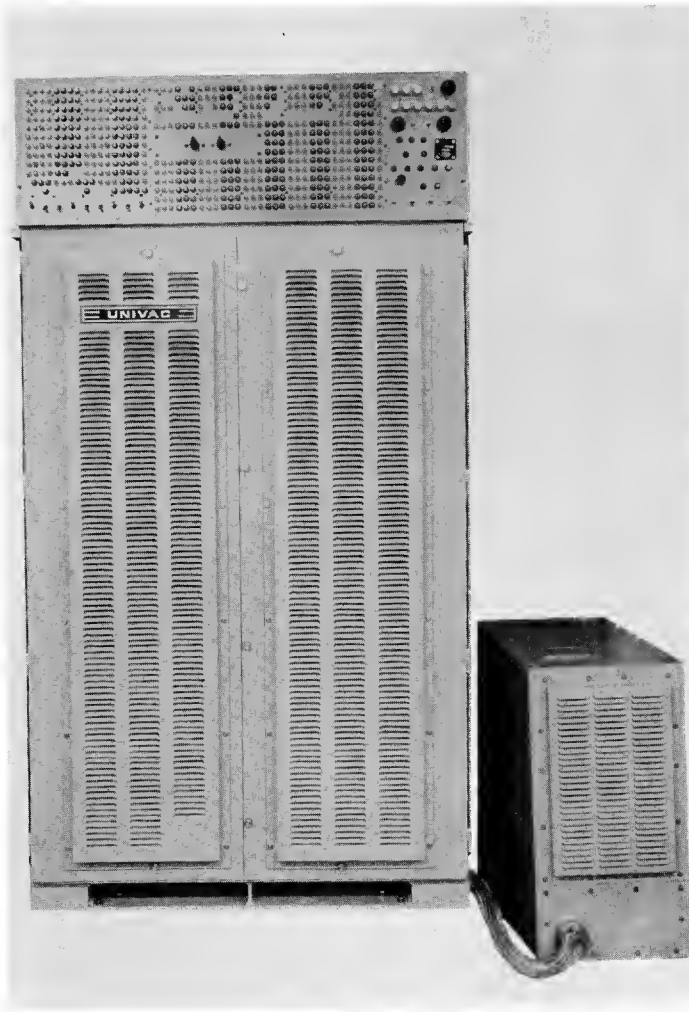


Photo # 28299

### FUNCTIONAL CHARACTERISTICS

**30-BIT WORD LENGTH**  
Half-Word Option

#### MEMORY

Magnetic Core Main Memory  
32K Words  
4-Microseconds Cycle Time  
NDRO Memory  
64 Words  
Magnetic Thin-Film Control Memory  
64 Words  
667-Nanoseconds Cycle Time

**SEVEN INDEX REGISTERS**  
Located in Control Memory

#### INSTRUCTIONS

62 Single Address Instructions  
15 Logical  
Square Root Instruction  
Branching Possible on Most

#### REAL-TIME CLOCK

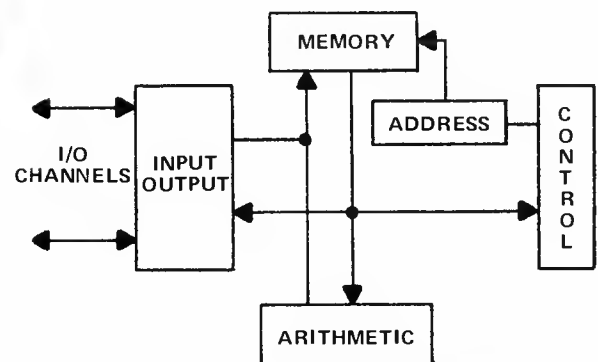
Internal at 1024 Hz, or  
External up to 100 KHz Max, N15

#### INPUT/OUTPUT CAPABILITIES (Buffered)

12 I/O Channels (Maximum)  
Automatic Priority Determination  
Intercomputer on Any Channel

Transfer Rates — Words/Second

Interface	N3	N15
Single Channel	125K	41K
Multi Channel	250K	125K



FUNCTIONAL DIAGRAM

8.69

## PHYSICAL CHARACTERISTICS

(CP808)

The main frame of the CP-808 is the same as that in the CP-642B Computer. One I/O chassis drawer position is vacant. Other design features contributing to the lighter weight computer are: light weight doors and skins, modified top covering and a different power supply (1214). The MTDS hut with equipment installed passed the:

Munson Road Test at Aberdeen, Maryland  
Helicopter drop test  
Temperature and Humidity test while operating  
Sand and Dust test while operating

Size: 71"H x 38"W x 31"D  
Weight: 1650 pounds  
Power: 3000 watts, 208  $\pm$  10% volts, 400 Hz

## REFERENCES

Design Specification DS 4781  
Acceptance Specification SB 10088  
Outline and Dimension Drawing 7024955

Product Line Manuals (PX):

<u>TECHNICAL</u>	<u>DIAGNOSTIC</u>
4649-X-1 (2)	4678-X-1 (4)

## UNIVAC 1214 (PP4892/TYA-20) EXTERNAL POWER SUPPLY

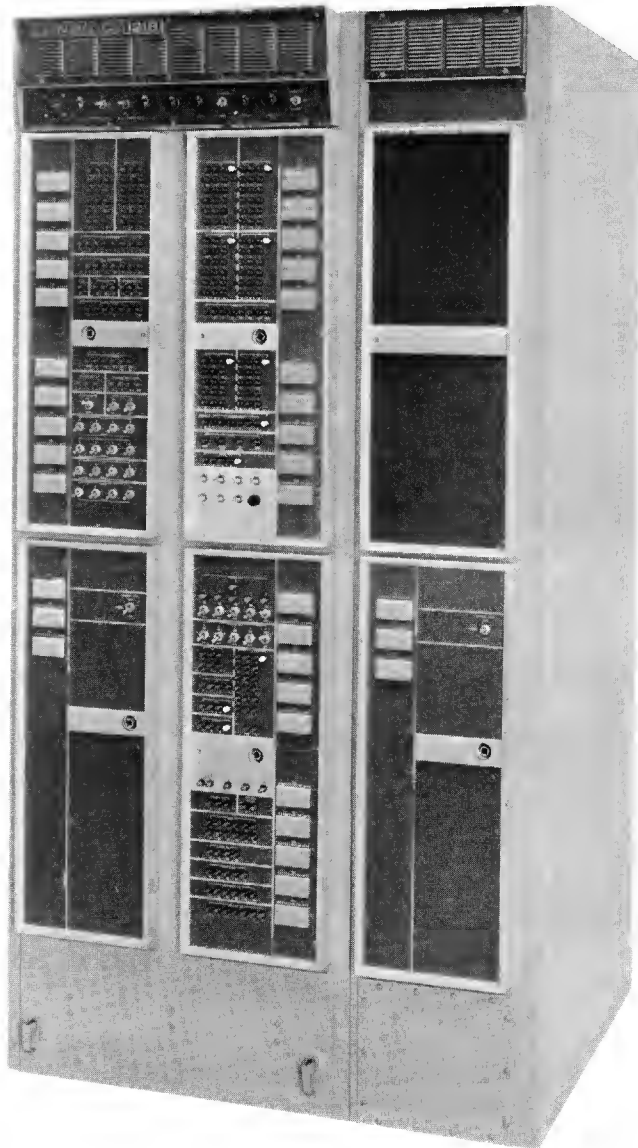
Size: 26"H x 13"W x 27"D  
Weight: 230 pounds  
Input Power: 500 watts, 208 volts, 400 Hz (Unregulated)  
Final Assembly Number: 7046125-00  
Outline and Dimension Drawing: 7046126

# PRODUCT INFORMATION

## UNIVAC 1218 MILITARY COMPUTER (CP-789/UYK)

PX 3051

The UNIVAC 1218 Computer was designed in 1962 as a militarized version of the 18-bit Control Unit Tester (CUT) in parallel with the commercial version, Prodac 580, a process control computer built for Westinghouse. The philosophy of simplicity was introduced into Univac products and provides a low cost ruggedized computer using simple instructions and modest technological advancements.



### FUNCTIONAL CHARACTERISTICS

#### 18-BIT WORD LENGTH

Double-Word Option  
Arithmetic  
Input/Output Transfer

#### MEMORY

Magnetic Core  
4K, 8K, 16K or 32K Words  
(2 Bay for 16K)  
(3 Bay for 32K)  
32 18-Bit Words NDRO (Bootstrap)  
4-Microsecond Cycle Time

#### EIGHT INDEX REGISTERS

Located in Core Memory  
18 Bits Each

#### ARITHMETIC

One's Complement Binary

#### 98 SINGLE ADDRESS INSTRUCTIONS

16 Logical (Bit Manipulation Type)  
4 Double Precision

#### REAL-TIME CLOCK

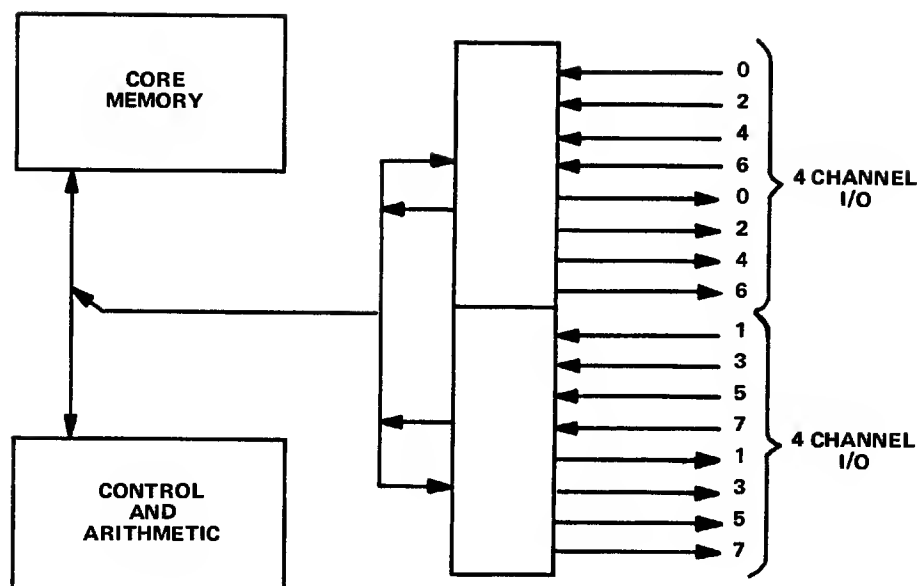
Internal (Time Increment of 1/1024 Second)  
External (N15 100KHz Maximum)

#### INPUT/OUTPUT CAPABILITIES (Buffered)

Four or Eight I/O Channels  
Forward or Backward  
Automatic Priority Determination  
Externally Specified Indexing  
Dual Channel Capability (36 Bits)  
Intercomputer on Any Channel

#### Transfer Rates — Words/Second

Interface	N3	N15
Single Channel	41K	28K
Multi Channel	100K	83K



**FUNCTIONAL DIAGRAM**

## PHYSICAL CHARACTERISTICS

### MILITARIZED CONSTRUCTION

The following specifications were used as a guide for the design and construction of the 1218 (CP-789).

#### MIL-E-16400

Pull-Out Drawer Modules

Internal Blower Ambient Air Cooling

### 16K MEMORY – 2 BAY

#### Size

72"H x 26"W x 29"D (without stabilizer)

73"H x 29"W x 39"D (with stabilizer)

#### Weight

830 Pounds

#### Power Requirements

1.0 KW, 115V, 400 Hz  $\pm 10\%$ , 3 phase

0.2 KW, 115V, 60 Hz  $\pm 10\%$ , 1 phase

### GREATER THAN 16K MEMORY – 3 BAY

#### Size

72"H x 39"W x 29"D (without stabilizer)

#### Weight

1080 Pounds

#### Power Requirements

1.25 KW, 115V, 400 Hz  $\pm 10\%$ , 3 phase

0.25 KW, 115V, 60 Hz  $\pm 5\%$ , 1 phase

## REFERENCES

Design Specification	SB 10106
Acceptance Specification	SB 10049
Outline and Dimension Drawing	7024756
Installation and Checkout Kit	LOG 7016
One Year Spares Kit	LOG 7509

Product Line Manuals (PX):

<u>TECHNICAL</u>	<u>DIAGNOSTIC</u>	<u>PROGRAMMING</u>	<u>MAINTENANCE</u>
3639-X-1(2)	3348-0-1	3818-0-2	3942-0-1
3639-X-2(2)	3349-0-1		
	3929-X-1(2)		

# PRODUCT INFORMATION

## UNIVAC 1219B MILITARY COMPUTER (CP-848/UYK)

PX 5010

The 1219 Computer is a second generation 18-bit computer. Primary technological advancement included: 1. increased memory speed to 2  $\mu$ sec, 2. increased input/output capacity by using high-speed (500 nanosecond) core memory buffer control, 3. more compact circuit packaging that permits 65K word memory in a 26" wide cabinet (2 bay) and 16 input/output channels in a 38" wide cabinet (3 bay).

The "B" version of the 1219 is designed to resolve compatibility problems developed in word format variations and input/output timing differences that extend the UNIVAC 18-bit computer history by the requirements of various applications and customers. Three general input/output modes are provided: 1218 normal, 1218 NTDS compatible, and 1219B.

### FUNCTIONAL CHARACTERISTICS

#### 18-BIT WORD LENGTH

Double-Word Option  
Arithmetic  
Input/Output Transfer

#### MEMORY

Magnetic Core Main Memory  
2-Microsecond Cycle Time  
8K, 16K, 32K, or 65K Words  
Fast Core Control Memory  
500-Nanosecond Cycle Time  
128 18-Bit Words (8 I/O Channels)  
256 18-Bit Words (16 I/O Channels)  
Fixed Memory  
32 18-Bit Words (NDRO)  
Bootstrap and Fault Recovery Operations

#### EIGHT INDEX REGISTERS (18 Bits Each)

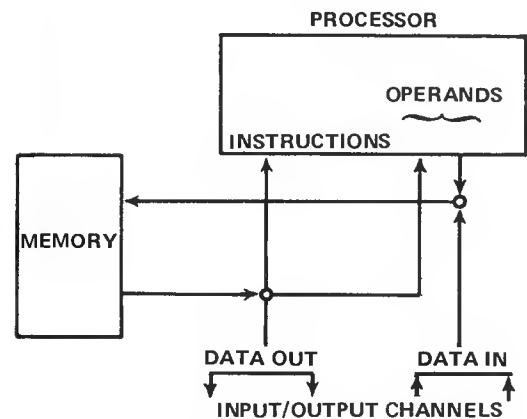
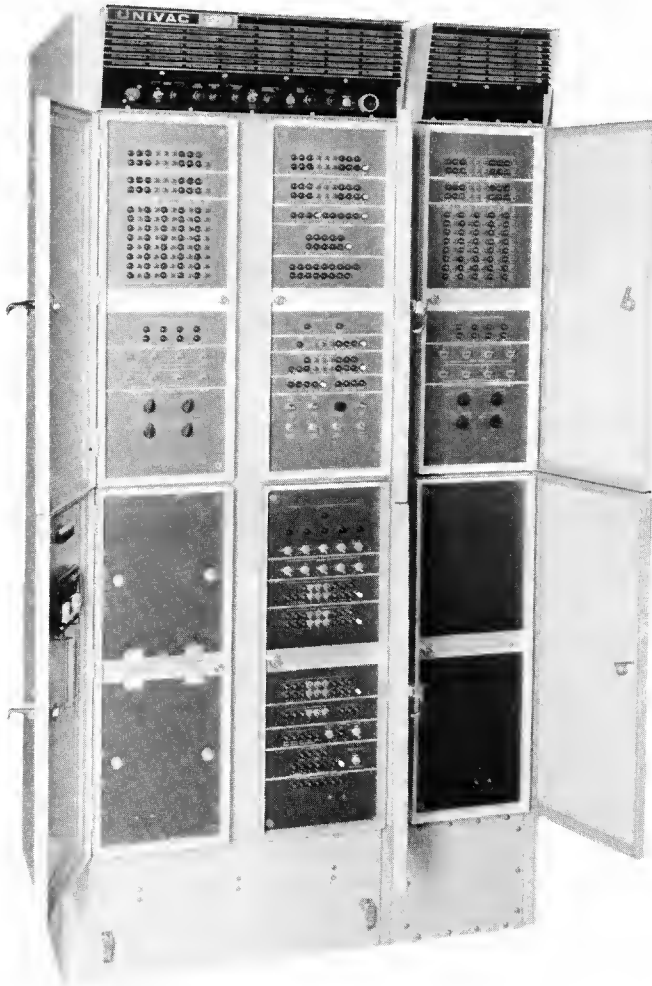
Located in Control Memory

#### 102 SINGLE ADDRESS INSTRUCTIONS

16 Logical (Bit Manipulation Type)  
4 Double Precision

#### REAL-TIME CLOCK

Internal (Time Increment of 1/1024 Second)  
External (N15 100KHz Maximum)



FUNCTIONAL DIAGRAM

## FUNCTIONAL CHARACTERISTICS (Continued)

(1219)

### INPUT/OUTPUT CAPABILITIES (Buffered)

4, 8, 12 or 16 I/O Channels  
Forward or Backward  
Automatic Priority Determination  
Continuous Data Mode  
Externally Specified Indexing  
Externally Specified Addressing  
Dual Channel Capability (36 Bits)  
Intercomputer on Any Channel

Transfer Rates — Words/Second

Interface	N3	N15
Single Channel	167K	41K
Multi Channel	500K	167K

## PHYSICAL CHARACTERISTICS

### SIZE AND WEIGHT

2 Module, 8 I/O, 65K Memory

	<u>WITHOUT STABILIZER</u>
Height:	72 inches
Width:	26 inches
Depth:	29 inches
Weight:	1000+ pounds

#### WITH STABILIZER

72 inches  
27 inches  
37 inches

3 Module, 12 or 16 I/O, 65K Memory

	<u>WITHOUT STABILIZER</u>
Height:	71 inches
Width:	38 inches
Depth:	29 inches
Weight:	1400-1500 pounds

#### WITH STABILIZER

72 inches  
39 inches  
37 inches

### POWER REQUIREMENTS

115-volt, 3-phase, 400 Hz  $\pm$  5%, 2510 watts maximum,  
air cooled (for 16 I/O channels and 65K memory)

### MILITARIZED CONSTRUCTION

The following specifications were used as a guide for the  
design and construction of the 1219B (CP-848).

Front access, pull-out drawer modules

Single unit, welded framework cabinet

Military specifications and standards

General	MIL-E-16400E(4)
Enclosure	MIL-STD-108D
RFI	MIL-I-16910C(2)
Vibration	MIL-STD-167
Shock Test	MIL-S-901C Amendment 2

### ENVIRONMENT

Operating Temperature Range:  
0 degrees to 50 degrees C

Storage Temperature Range:  
-62 degrees to +75 degrees C

Relative Humidity to 95 percent

### REFERENCES

Design Specification	SB 10157
Acceptance Specification	SB 10163
Outline and Dimension Drawing	7053743

Product Line Manuals (PX):

<u>EQUIPMENT TYPE</u>	<u>TECHNICAL</u>	<u>DIAGNOSTIC</u>	<u>PROGRAMMING</u>	<u>MAINTENANCE</u>
1219	3316-X-3(2)	3520-X-2(2)	3943-0-2	3418-0-1
1219A	3316-X-3(2)	3520-X-2(2)	3943-0-2	3418-0-1
1219B	4682-X-2(2)	4637-X-1(2)	3943-0-3	5067-0-1



# PRODUCT INFORMATION

## UNIVAC 1230 MILITARY COMPUTER (CP-855/UYK)

PX 3600

The UNIVAC 1230 (CP-855/UYK) Computer is a second generation 30-bit military type computer designed for memory sharing (overlap) of 16K word modules of 2-microsecond core. Two memory banks, operating in parallel, allow two simultaneous references for input/output, instruction extraction or operand processing during one cycle. Further advancement over the predecessor included memory addressing (via special registers) beyond 32K word capacity (to 131K) for use with the 1503 Expanded Memory Unit (EMU) and the hardware Floating Point Option. One type of chassis is used for all optional input/output features. The instruction repertoire was extended to the requirements of new features.

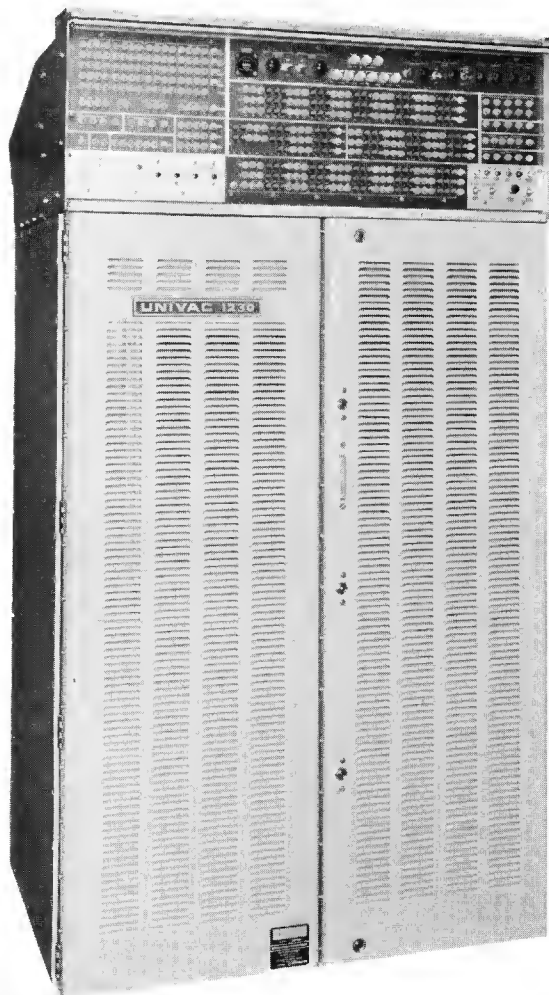


PHOTO #26166

### FUNCTIONAL CHARACTERISTICS

#### 30-BIT WORD LENGTH

Half-Word Option

#### MODES OF OPERATION (Switch Selectable)

15-Bit Addressing Mode  
17-Bit Addressing Mode

#### MEMORY

- Magnetic Core Main Memory
  - 32K Words
  - Expandable in 16K Banks
  - 2-Microsecond Cycle Time for Each Bank
  - Overlap Feature Produces Effective 1-Microsecond Cycle Time
- Nondestructive Readout Memory
  - 64 30-Bit Words
- Magnetic Thin-Film Control Memory
  - 128 30-Bit Words
  - 400-Nanosecond Cycle Time

#### SEVEN INDEX REGISTERS

- Located in Control Memory
- 15-Bit (Normal Mode)
- 17-Bit (Expanded Mode)

#### INSTRUCTIONS

- 78 Single Address Instructions (Basic)
  - 15 Logical
  - Square Root Instruction
- Branching Possible on Most

#### REAL-TIME CLOCK

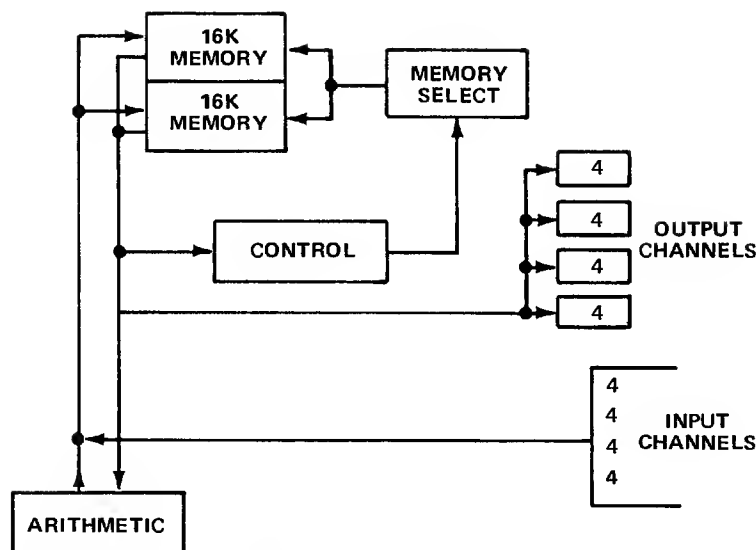
- Internal (Time Increment of 1/1024 Second)
- External (N15 100KHz Maximum)

#### INPUT/OUTPUT CAPABILITIES (Buffered)

- 16 I/O Channels
- Automatic Priority Determination
- Continuous Data Mode
- Externally Specified Indexing
- Externally Specified Addressing
- Intercomputer on Any Channel

#### Transfer Rates — Words/Second

Interface	N3	N15
Single Channel	167K	41K
Multi Channel	500K	333K



FUNCTIONAL DIAGRAM

## PHYSICAL CHARACTERISTICS

### COOLING

Water: 5.5 gallons-minute at  $70^{\circ} \pm 5^{\circ}\text{F}$   
 Air: Approximately 850 cfm at  $80^{\circ}\text{F}$  maximum input

### COMPACT

Size: 72"H x 38"W x 37"D  
 EMU Modified (72"H x 42"W x 37"D)  
 Weight: 2200 Pounds

### RELIABILITY

MTBF of 1500 Hours (Calculated)

### POWER

115V, 3 phase, 400 Hz, 3.1 KW (Regulated)  
 115V, 1 phase, 60 Hz, 500 W (Unregulated) — Air Cooled Blowers  
 115V, 3 phase, 400 Hz, 1455 W (Unregulated) — Water Cooled Blowers

### MILITARIZED CONSTRUCTION

Front access, pull-out drawers  
 Single welded framework cabinet  
 Internal blowers for air circulation

The following specifications were used as a guide for the design and construction of the 1230 (CP-855).

General	MIL-E-16400
RFI	MIL-I-16910A
Enclosure	MIL-STD-108D (Drip proof)
Salt Spray	FED-STD-151 (Method 811)

### ENVIRONMENT

Temperature MIL-F-18870B and MIL-E-16400E (Class 4)  
 $0^{\circ}$  to  $50^{\circ}\text{C}$   
 Relative Humidity to 95%

## REFERENCES

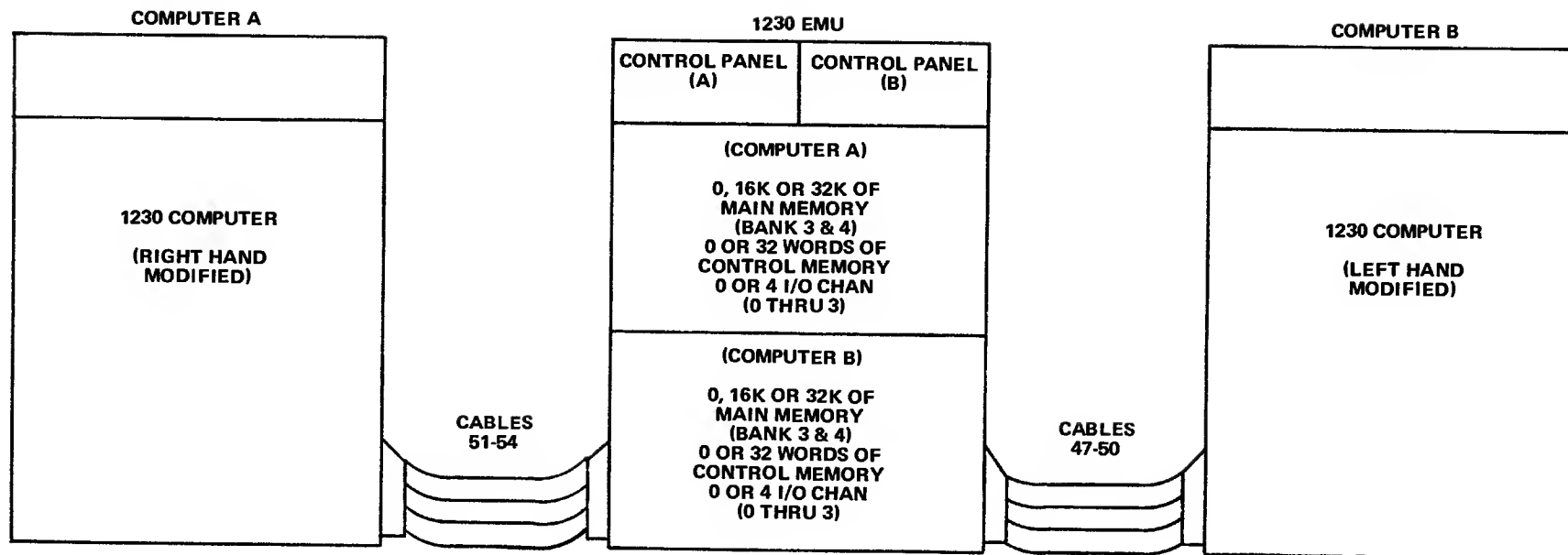
Design Specification  
 1230 DS 4836  
 1230 with Floating Point SB 10092  
 1230 Modified for EMU SB 10099

Acceptance Specification  
 1230 DS 4837  
 1230 with Floating Point SB 10094

Outline and Dimension Drawing 7025024

Product Line Manuals (PX):

<u>EQUIPMENT</u>	<u>TECHNICAL</u>	<u>DIAGNOSTIC</u>	<u>PROGRAMMING</u>	<u>MAINTENANCE</u>
1230	3762-X-3(2)	4272-X-2(4)	3944-0-2	3992-0-1
1230 with Floating Point	4692-X-1(2)	4418-X-1(4)		
1230 EMU Modified	4721-X-1(2)	4929-X-1(4)		



## NOTES:

- 1) When utilizing the 1230 EMU with a single computer, the B section (bottom) should be used to keep the center of gravity low.
- 2) The length of cables between the EMU and computer is limited to 18 inches.

TYPICAL 1230 EXPANDED MEMORY UNIT (1503) INTERCONNECTION (FRONT VIEW)

# PRODUCT INFORMATION

## UNIVAC CP-890/UYK MILITARY COMPUTER (C-3)

PX 4292A

In 1967, Univac designed and built the CP-890/UYK Computer to satisfy the navigation requirements of the U.S. Navy's Polaris submarines. It is built to pass through a 25-inch diameter hatch without dismantling; weight and power were minimized while still providing general-purpose capability and applications. The physical configuration consists of three hinged chassis containing printed circuit logic cards and core memory array stacks. A display panel includes approximately 400 indicator light switches, a keyboard, and a keyset. The power supply is housed at the lower rear of the cabinet. Such standard features as hardware floating point, power failure detection, and protection, executive mode of operation and the necessary logic and wiring to permit memory expansion (external) to 262K words in 16K asynchronous modules are included in the design.

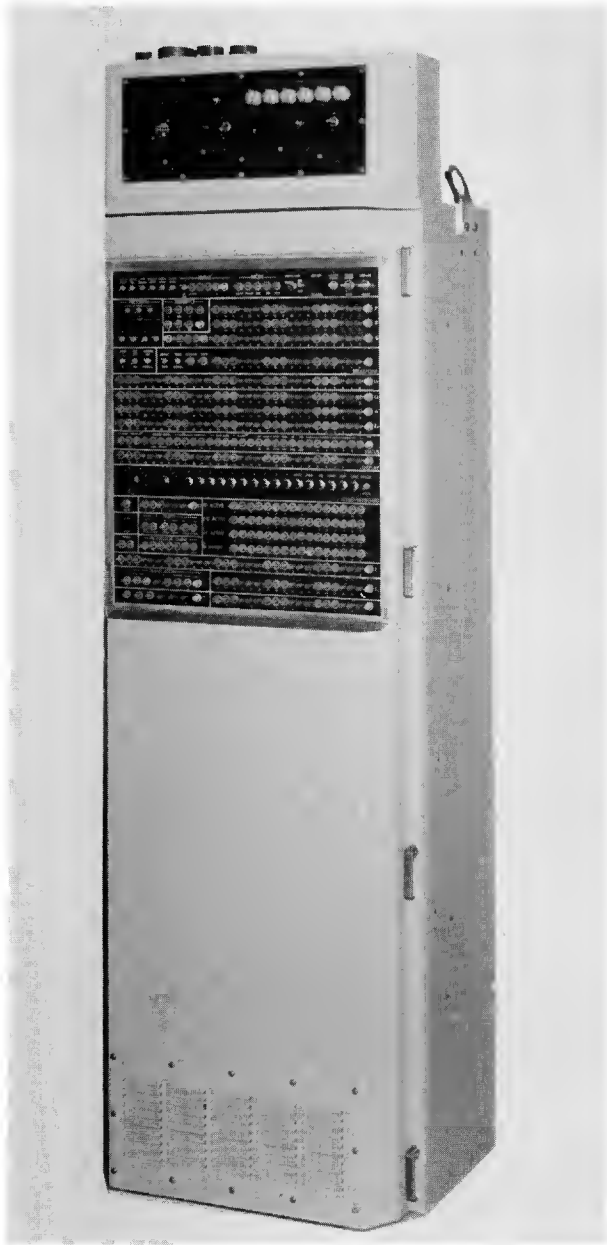


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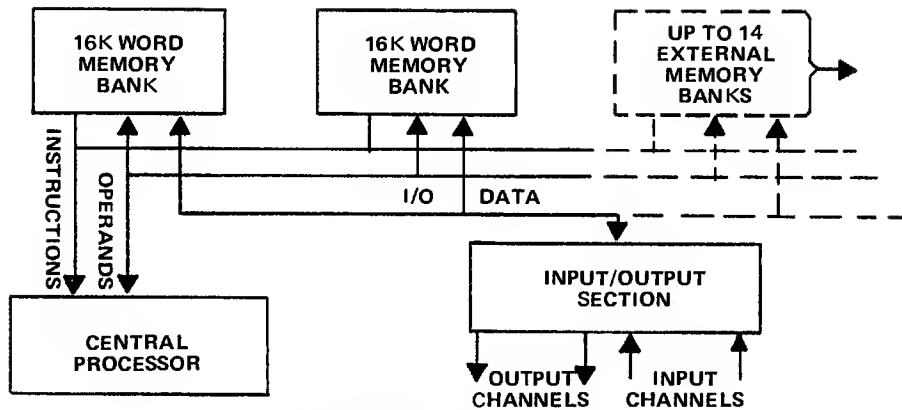
### FUNCTIONAL CHARACTERISTICS

#### MAIN MEMORY (Internal)

- 32K 32-bit (30 data, 2 parity) words in 2 16K word banks
- 1.8-microsecond magnetic core
- Interface
  - 6 access ports served in priority order
  - Asynchronous timing
  - Half or full word operand access
  - Integral power supply
  - Power tolerance interrupt

#### PROCESSOR

- One's complement, integer binary
- Fixed and floating point arithmetic
- Basic Instructions
  - 105 total
  - 27 executive
- Addressing Range
  - 15-bit address mode to 32,768 words (normal)
  - 18-bit address mode to 262,144 words (expanded)
- Index Registers — 2 groups of 7 each
  - Both groups for executive
  - One group for worker
  - 15 bits in normal mode
  - 18 bits in expanded mode
- Processor Status Register
  - Base memory bank selection
  - Executive mode control
  - Direct and indirect addressing
  - Index register group selection
- Keyboard, keyset inserts, local or remote
- Real-Time Clock
  - Internal at 1024 cycles per second, or
  - External up to 50,000 cycles per second
- Memory read and/or write lockout option (2,048 word blocks)
- Breakpoint
  - NDRO Memory — 128 words (bootstrap)
  - Hardware interrupt analysis routine
  - Automatic recovery and initial input routine

**FUNCTIONAL DIAGRAM****FUNCTIONAL CHARACTERISTICS (Continued)****INPUT/OUTPUT SECTION**

Channels  
12 or 16 30-bit parallel  
N3 or N15 voltage levels

**Transfer Rates — Words/Second**

Interface	N3	N15
Single Channel	176K	41K
Multi Channel	500K	125K

**I/O Priority Order**

Fixed function  
Optional channel order

**Control Memory (integrated circuit)**

48 buffer control words  
Interrupt assignment and status register

**Memory Addressability**

1 to 16 memory banks

**Asynchronous memory access****Operating Modes**

Normal buffer  
Intercomputer  
Externally Specified Index (ESI)  
Externally Specified Address (ESA)  
Continuous Data Mode (CDM)

**REFERENCES**

Design Specification 2802713  
Acceptance Specification 2802715  
Outline and Dimension Drawing 2804000

SB 10 159

**PHYSICAL CHARACTERISTICS****MILITARIZED CONSTRUCTION**

Single welded framework cabinet is air cooled (Ships Air or Internal).

Replaceable integrated circuit cards and parts are accessible from front via open door.

Packaging is designed to suppress radiated and conducted audio frequencies.

Shock mounts and sway brace.

**SPECIFICATIONS USED FOR DESIGN GUIDES**

General MIL-E-16400  
Basic Design Requirements MIL-I-983C (Ships)  
RFI MIL-I-16910(C)  
Enclosure MIL-STD-108(D) Chg 1  
Vibration MIL-STD-167 (Type 1)

**ENVIRONMENT**

Operating Temperature Range:  
40 degrees to 122 degrees F

Storage Temperature Range:  
-65 degrees to 165 degrees F

Relative Humidity to 95 percent

**COMPACT****Size**

74"H x 22"W x 18"D

**Weight**

580 pounds maximum (32K memory 12 I/O channels)

**RELIABILITY**

MTBF of 2000 hours (calculated)

**POWER REQUIREMENTS**

2.15 KW, 115-volt, 400 Hz, 3-phase (for 32K memory and 12 I/O channel configuration)

# PRODUCT INFORMATION

## UNIVAC 1503 EXPANDED MEMORY UNIT (EMU)

PX 5440

The UNIVAC Expanded Memory Unit (EMU) is a high-speed militarized, auxiliary memory device for use with two UNIVAC 1230 Computers (EMU modified). It expands each of the internal program memory sections of the two computers, increasing the storage capacity of each computer to 65,536 30-bit words. Two identical memory systems, each consisting of a maximum of 32,768 words, can be contained within the cabinet of the EMU. Each memory system is functionally independent and is connected by cables to the computer with which it operates. The modified UNIVAC 1230 Computer has direct access to its own internal program memory and all locations of the expanded memory section assigned to it. Through an intercomputer input/output channel, one 1230 Computer may communicate with the other 1230 Computer, and thereby with the other section of expanded memory.

### FUNCTIONAL CHARACTERISTICS (Each System)

#### Memory (Main Storage)

- Magnetic core
- 2 overlapped banks
- 2.0 microsecond read-write cycle time (effectively 1 microsecond with overlap)
- 30-bit word length, parallel transfers
- 32,732 directly addressable, half- or full-word operands
- Octal addresses, 100040-177777
- Operand (data) or instruction storage

#### Memory (Control)

- Integrated circuit chips
- 32 30-bit words
- Octal addresses, 100000-100037
- Buffer Control Words
- Continuous data mode reload storage
- Cycles independently and in parallel with main storage

#### Input/Output

- Four input channels; four output channels
- Buffer mode
- Externally Specified Address mode
- Continuous data mode, program controlled
- Signal levels: N3 volt or N15 volt
- Data transfer rates:
- 166,667 words/second per channel, maximum or
- 333,000 words/second (each 4 channel group)

#### Priority of Events

- First order by channel
- Second order by function

#### Computer/EMU Interface (via four cables)

- Data and instruction transfers
- Command and timing control
- Memory address and bank selection
- Interrupt communication
- EMU input/output control

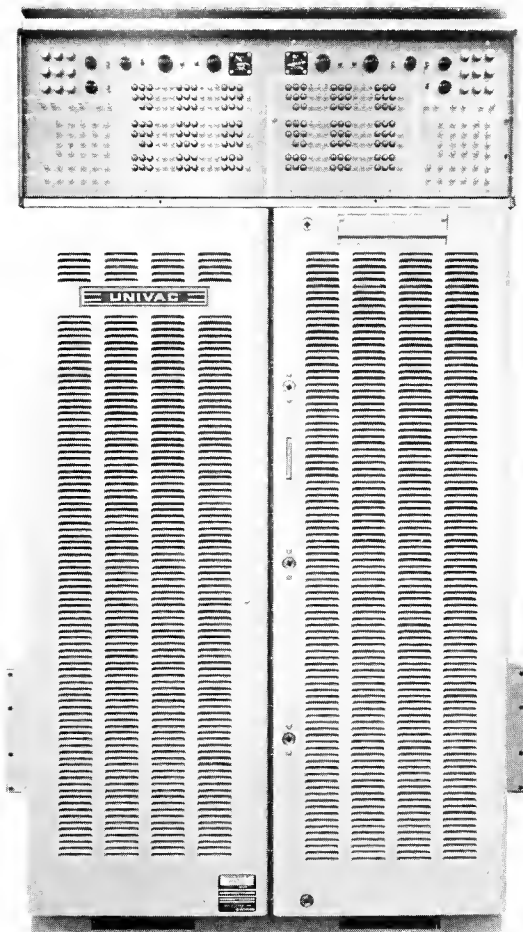
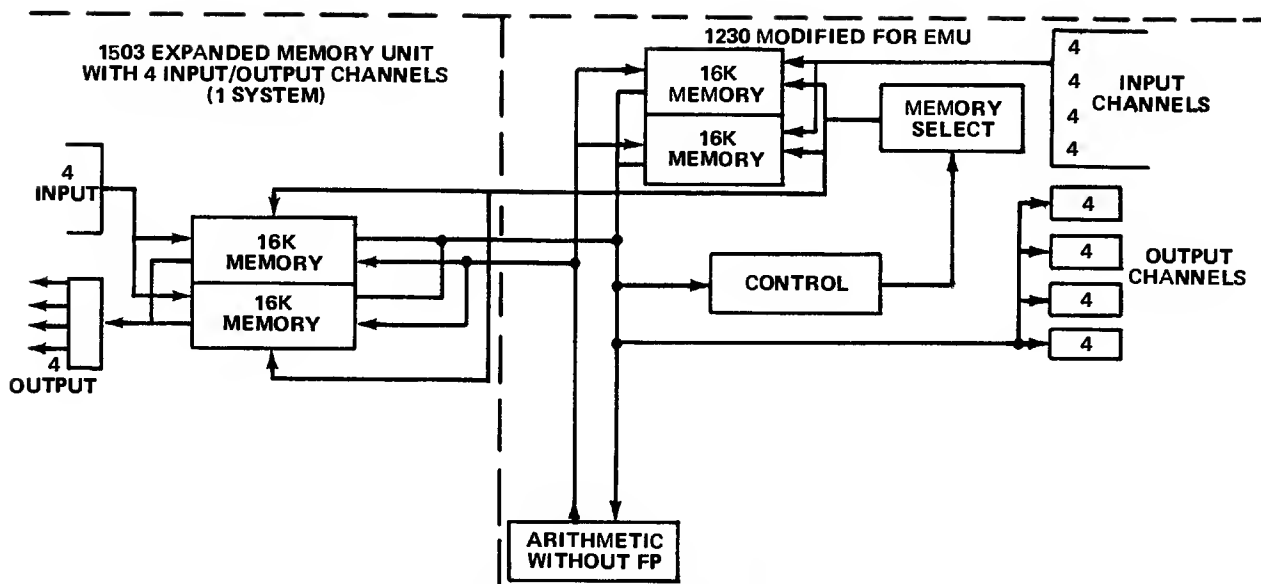


Photo No. 29104

8.69



FUNCTIONAL DIAGRAM

## UNIVAC 1503 EXPANDED MEMORY UNIT

### PHYSICAL CHARACTERISTICS

#### Military Construction

The cabinet for the EMU is the same as that used for the 1230 Computer.

Size (in inches)

Height	
Shock mounted	72
Solid base	70-3/4
Width	47
Depth	37

Weight (in pounds)

65K memory and EMU with 8 I/O channels	2100
--	------

Power Requirements for a complete EMU (2 32K with 4 I/O Channels each)

#### Logic

Voltage	Frequency	Phase	Wattage
115 ± 5%	400 Hz ± 5%	3 (3 wire)	3000

Blowers (Cooling) Forced Ambient Air at 800 cfm

Voltage	Frequency	Phase	Wattage
115 ± 10%	60 Hz ± 5%	1	500

Unregulated

Blowers — Water Cooled

Voltage	Frequency	Phase	Wattage
115 ± 10%	400 Hz ± 5%	1	825

### REFERENCES

Design Specification DS 4821  
Acceptance Specification SB 10102

Outline and Dimension Drawing 7046501

Product Line Manuals (PX):

#### TECHNICAL

4721-X-1 (2)  
4722-X-1 (2)

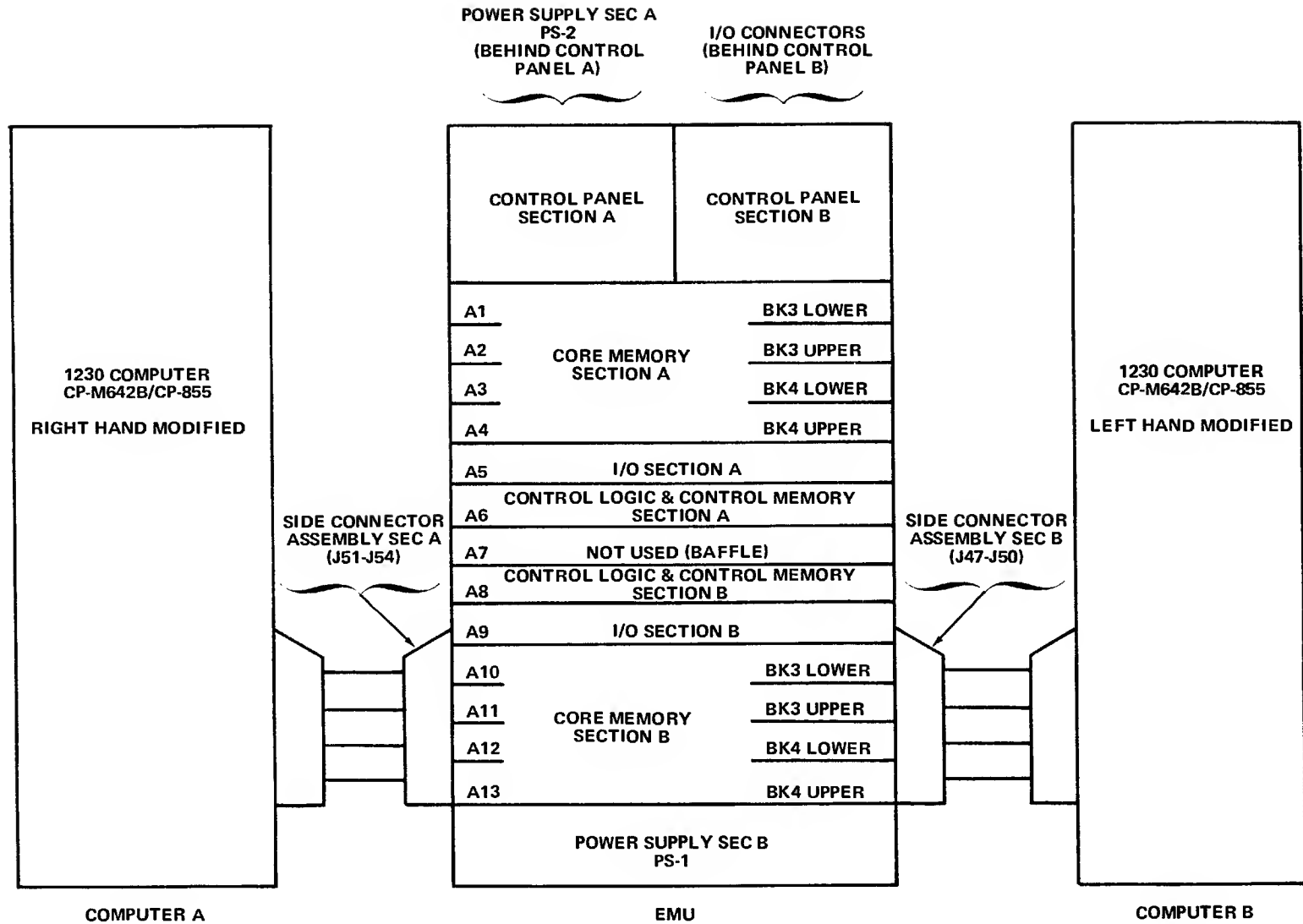
#### DIAGNOSTIC

4929-X-1 (4)

### ENVIRONMENTAL CHARACTERISTICS

The UNIVAC 1503 EMU is designed with the following specifications and standards as goals:

General Requirements	MIL-E-16400E
Temperature Operating	0°C to +50°C (MIL-E-16400 and MIL-F-18870 Class 4)
Nonoperating	-62°C to +75°C
Relative Humidity	to 95%
Shock	(MIL-S-901B, Class I)
Vibration	(MIL-STD-167, Type I)
Electro Magnetic Interference	MIL-I-16910C
Salt Spray	200 Hrs. (frame) 28 Hrs. (components) FED Test Method STD No. 151



1230 – EMU CONFIGURATION (FRONT VIEW)



# PRODUCT INFORMATION

## UNIVAC 1530 (1230 MTC) COMPUTER

PX 4771A

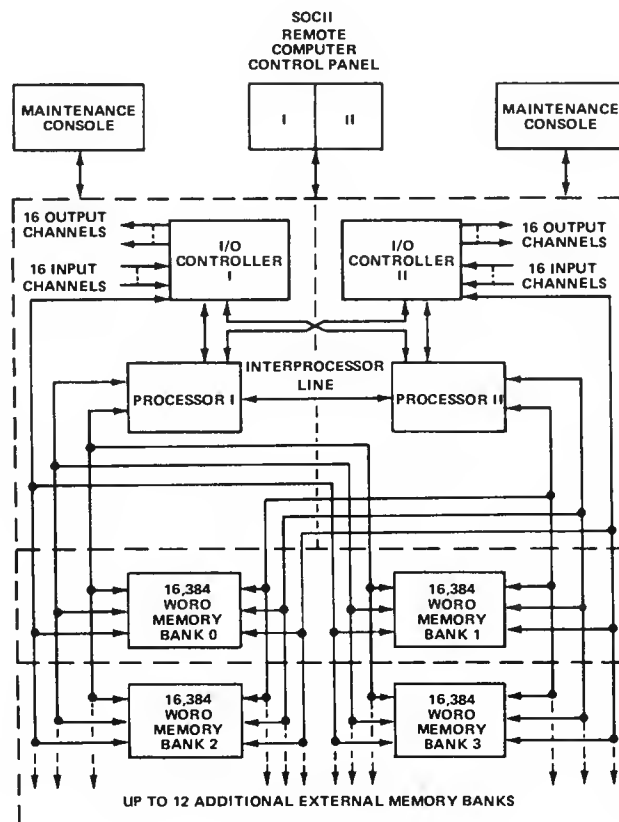
The UNIVAC 1530 (single or dual processor) is a third generation computer designed with monolithic integrated circuits in modular assemblies that are packaged in a ruggedized cabinet. A maintenance panel in a separate console can be connected to each processor with four cables, 50 feet or less in length, for both operation and maintenance purposes. However, computer operation can be controlled from an optional remote control panel (SOCII) that contains minimal, but necessary, indicators and switches. Modular construction and asynchronous module operation permits a variety of computer configuration and capabilities.



PHOTO #3636

### GENERAL FUNCTIONAL CHARACTERISTICS

Modular functional architecture  
Asynchronous intermodule communication  
Multiprogramming and dual processing capability  
Dynamic error and status registers  
Memory addressing to 262,144 words (16 banks)



FUNCTIONAL DIAGRAM

## FUNCTIONAL CHARACTERISTICS

### MAIN MEMORY MODULE

2 16K word banks  
 32K 32-bit (30 data, 2 parity) words  
 1.8-microsecond magnetic core  
 Interface  
   6 access ports  
   Asynchronous timing  
   Access priority network  
 Half or full word operand access  
 Integral power supply  
 Power tolerance interrupt

### PROCESSOR

One's complement, integer binary  
 Fixed and floating point arithmetic  
 Basic Instructions  
   106 total  
   27 executive  
   1 interprocessor interrupt  
 Addressing Range  
   15-bit address mode to 32,768 words (normal)  
   18-bit address mode to 262,144 words (expanded)  
 Overlapped Operation  
   2 or more memory banks  
 Index Registers — 2 groups of 7 each  
   Both groups for executive  
   One group for worker  
   15 bits in normal mode  
   18 bits in expanded mode  
 Processor Status Register  
   Base memory bank selection  
   Executive mode control  
   Direct and indirect addressing  
   Index register group selection  
   One or two input/output controllers  
 Real-Time Clock  
   Internal at 1024 cycles per second, or  
   External up to 50,000 cycles per second  
 Memory read and/or write lockout (2,048 word blocks)  
 Breakpoint  
 NDRO Memory — 128 words (bootstrap)  
   Hardware interrupt analysis routine  
   Automatic recovery and initial input routine  
 Integral power supply

### INPUT/OUTPUT CONTROLLER

Channels  
   4, 8, 12 or 16 30-bit parallel  
   N3 or N15 voltage levels

#### Transfer Rates — Words/Second

Interface	N3	N15
Single Channel	167K	41K
Multi Channel	555K	333K

#### I/O Priority Order

Fixed function  
 Optional channel order  
 Control Memory (integrated circuit)  
   Real-time clock update and monitor  
   48 buffer control words  
 Interrupt assignment and status register  
 Operating Modes  
   Normal buffer  
   Intercomputer  
   Externally Specified Index (ESI)  
   Externally Specified Address (ESA)  
   Continuous Data Mode (CDM)  
 Real-Time Clock  
   Internal at 1024 cycles per second, or  
   External up to 100,000 cycles per second  
 Processor Control  
   Simplex or duplex  
 Integral power supply

## PHYSICAL CHARACTERISTICS

Modular functional sections are assembled in pull-out drawer sections as follows: One Central Processor and one Input/Output Controller with associated power supplies occupy one upper drawer. Two 16K memory banks with associated power supplies occupy one lower drawer. Input/output connectors, power connectors, power control panel (2 for dual computer) and cooling air intake occupy the top section of the welded, aluminum frame cabinet. In a single computer configuration one computer control panel replaces one power control panel.

### POWER SOURCE

115 volt, 400 Hz + 5%, 3 phase

### CABINET SIZE

72"H x 26"W x 30"D  
 Volume — 30 cubic feet

	2-Processor 2-IOC 65K Memory*	1-Processor 1-4 Chan. IOC 32K Memory
Approx. Weight	1150 pounds	750 pounds
Power Consumption	4.8 KW	2.4 KW

\*Full Cabinet Configuration

### MAINTENANCE PANEL SIZE

22"H x 21"W x 18"D  
 Power Consumption — 0.2 KW

### SOCH PANEL SIZE

5"H x 10"W x 5"D  
 Power supplied by computer

### SPECIFICATIONS AND STANDARDS USED AS DESIGN GOALS

General MIL-E-16400F (Amendment 2)  
 Enclosure MIL-STD-108D (Change 1)  
 Salt Spray Test Method 811 of Fed. STD No. 151

### ENVIRONMENTAL

Operating Temperature 0°C to +50°C  
 Nonoperating Temperature -62°C to -75°C  
 Relative Humidity to 95%  
 Operating Altitude to approx. 10,000 feet  
 Nonoperating Altitude to approx. 40,000 feet

**REFERENCES**

	<b><u>DESIGN SPECIFICATION</u></b>	<b><u>ACCEPTANCE SPECIFICATION</u></b>	<b><u>OUTLINE AND DIMENSION DRAWING</u></b>
Computer, Digital Data Dual Processor/LOC (RTS/ADS)	SB10133	SB10134	7078100
Computer Control Panel 1230 MTC (SOCII)	SB10135	None	
Computer Maintenance Consoles (1230 MTC)	SB10136	SB10134	7078080 (with 1232)
1530-01 Computer, Digital Data Single Processor with Processor Control (SOCII in Power Control Panel)	SB10200	SB10230	7077553

# PRODUCT INFORMATION

## UNIVAC 1819 AVIONICS COMPUTER

PX-5242

The UNIVAC<sup>®</sup> 1819 Avionics Computer is designed for general purpose data processing in aerospace and avionics application. It is software compatible with the 1218/1219 computers. Design concepts and packaging evolve from predecessor 1830 and 1818 computers. An integral power supply provides regulated dc voltages from 400 Hz input power that meets the requirements of MIL-STD-704A. Automatic program start-up is accomplished by applying primary power to the computer.

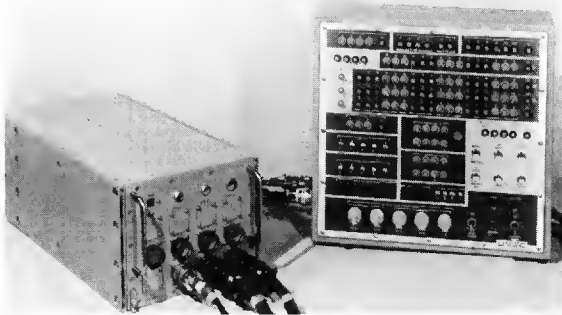


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### FUNCTIONAL CHARACTERISTICS

General purpose 18-bit computer  
Expansion options

#### MEMORY

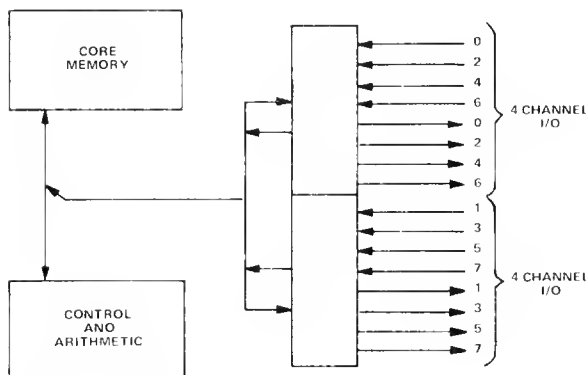
Magnetic core main memory  
2 microsecond cycle time  
4096-word stacks  
Expandable in 4096-word increments  
NDRO core rope memory  
48-word or 1024-word plug in modules  
Expandable in 1024-word increments  
Capacity: 32,768 words in any mix of DRO stacks or NDRO modules

#### CONTROL

97 single address instructions  
One's complement arithmetic  
Single and double length add and subtract  
8 index registers — main memory  
Real time clock: 1028 counts per second

#### INPUT/OUTPUT CAPABILITIES

4 channels input, 4 channels output  
Expandable to 8 each  
Single channel transfers, 18-bit  
Dual channel transfers, 36-bit  
Buffer control words — main memory  
Transfer rate: 125000 words per sec. max.  
Priorities: Function detection and order selection  
Channel detection and order selection



Functional Diagram

#### INTERRUPTS

Real time clock  
1 external per channel  
3 internal per channel (monitors)  
Power shutdown

## PHYSICAL CHARACTERISTICS 1819

High density microelectronic or discrete components are assembled on 3-layer printed circuit boards that plug into mating receptacles that are part of the wire wrapped, interconnecting back panel. Up to 12,288 words of memory, power supply, control, arithmetic, and I/O circuitry are packaged in an all welded case that is closed with RFI sealed cover plates.

Size: 9.93" x 7.63" x 20.52"  
(with up to 12,288 word memory)

Weight: 49 pounds\*

Power consumption: 280 watts\*

200 volts line to line or

115 volts line to neutral

400 Hz, 3 phase, 4 wire

\*for computer with 9,216 word memory

## SPECIFICATION USED FOR DESIGN GOALS

MIL-E-5400

MIL-I-6181

## ENVIRONMENTAL CHARACTERISTICS

Operating temperature: -54° to 71°C

Non-operating temperature: -62° to 85°C

Relative humidity: 0 to 100%

Altitude: to 70,000 feet

## REFERENCES

Product specification SB-12283

1830A I/O characteristics PX-4478

Control console SB-12297

# PRODUCT INFORMATION

## UNIVAC AN/UYK-7(V) COMPUTER

PX 4758B

A successor to the CP-642A (1206) and the CP-642B (1213) Computers, the AN/UYK-7 features high density, microelectronic circuits packaged in ruggedized, functional modules, which are in turn assembled in a militarized cabinet. Expanding the AN/UYK-7 system to meet additional requirements is accomplished by adding only those modules bearing the characteristics of functions desired. Limits of expansion are determined by the amount of intermodule communication required and the addressing capability of each module.

The AN/UYK-7 Computer is configured from the following modules as required:

- Central Processor
- Input/Output Controller
- Input/Output Adapter (4, 8, 12 or 16 channels)
- 16,384 word memory
- Power supply
- Remote operator's and maintenance panel
- Cabinet with blowers and operating panel

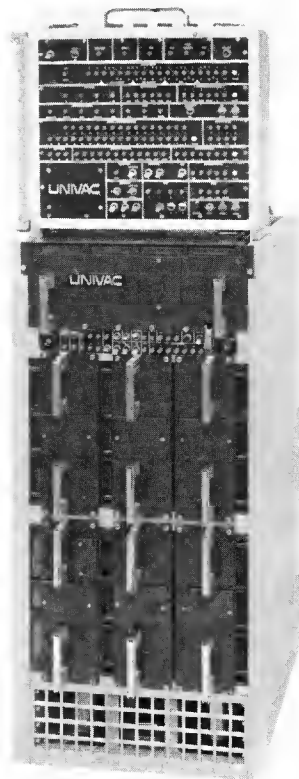
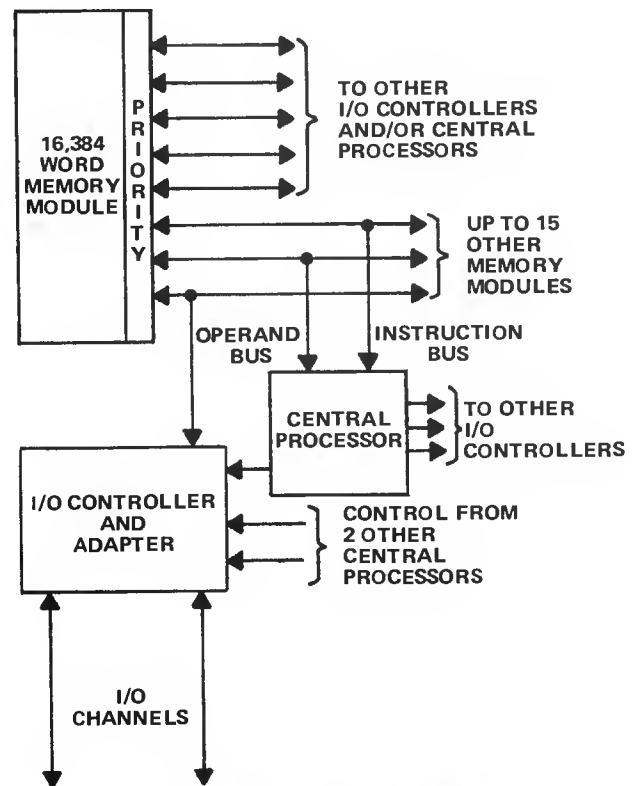


PHOTO #3844



FUNCTIONAL DIAGRAM

### GENERAL FUNCTIONAL CHARACTERISTICS

Modular functional architecture  
Asynchronous intermodule communication  
Multiprogramming and multiprocessing capability

Dynamic error and status registers  
Memory addressing range to 262,144 memory words  
(16 modules)

8.69

## MODULE FUNCTIONAL CHARACTERISTICS

### MEMORY MODULE

Temperature stable coincident current core  
Capacity: 16,384 32-bit words  
Eight access ports per module with priority net selection  
1.5 microsecond read-write cycle time  
Optional interleaved addressing between two modules

### CENTRAL PROCESSOR MODULE

Overlapped operation, two or more memory modules  
130 basic whole and half word instructions  
    Direct or indirect addressing  
    Variable length character addressing  
    Privileged instruction set  
Task and interrupt operating states  
    Two sets of seven index and eight base registers  
    Two sets of eight addressable accumulators  
Decrementing monitor clock @ 1024/second  
Sixteen memory lockout registers — 2048 word blocks  
Interface capability  
    16 memory modules maximum  
    4 I/O controllers maximum  
NDRO memory 512 words  
    Initial load programs  
    Fault analyses and recovery  
    Hardware diagnostics  
Arithmetic  
    32-bit parallel, one's complement, binary  
    Fixed and floating point hardware  
    8, 16, 32 or 64-bit operands

### INPUT/OUTPUT CONTROLLER

Direct access data transfers, to and from, up to 16 memory modules  
Controlled by 1, 2, or 3 central processors  
Programmed operations with command chaining capability  
Repertoire of 15 basic instructions  
Integrated circuit control memory  
    Buffer control words  
    Command address pointers (function control words)  
    Clock storage  
Internal or External Real Time Clock  
Operating modes  
    Normal buffer  
    Externally specified index  
    Externally specified address  
    Command chaining  
        Continuous data mode  
        Pack and unpack 8, 16 or 32-bit bytes  
    Intercomputer communication  
Interface adapter  
    4, 8, 12 or 16 full duplex input and output channels  
    32-bit parallel or optional bit serial channels

Optional Electrical Interface			
Interface Voltage Levels in 4 Channel Groups	N15	N3	P3
Maximum Data Transfer Rate per Second per Channel	33,000	167,000	167,000

Bit serial channel rate: 10 megabits per second

### POWER SUPPLY MODULE

Capacity:  
    Power to 6 computer modules, remote operator's panel and maintenance console  
Module Protection:  
    Overload, shorts or over temperature  
Power Failure Detection:  
    Interrupts central processor  
Energy Storage:  
    For 250 microseconds after input power loss

### OPERATOR'S AND MAINTENANCE PANEL

Maintenance controls, switches and indicators  
Up to 15 feet of interconnecting cable  
Separate cabinet

## PHYSICAL CHARACTERISTICS

Militarized construction, welded aluminum cabinet with operating panel and running time meter

Thermal conductive heat removal to air cooled heat exchangers

Maintainability preserved in modular design

Throw away printed circuit cards

Convenient expansion and configuration modification

Single to multiprocessor expansion

Shared memory configuration changes

Increase input/output channel capacity

Intermix main memory modules of different speeds

Basic computer configuration:

Consists of a power supply, central processor, I/O controller, I/O interface adapter (16 channels) and 3 memory modules (49,152 words) in a single cabinet

<u>Computer</u>		<u>Maintenance Panel/Console</u>
Size:	41"H x 20"W x 22"D	18"H x 19"W x 6"D
Volume:	10.4 cubic feet	1.2 cubic feet
Weight:	500 pounds	50 pounds
Power consumption:	2500 watts, 115V, 3 phase, 400 Hz, per MIL-STD-761A	

## SPECIFICATIONS AND STANDARDS USED FOR DESIGN OBJECTIVES

General Construction:

MIL-E-16400

(Enclosure, Inclination)

Radio Frequency Interference:

MIL-I-16910

Shock:

MIL-S-901 Class I Medium Weight

Vibration:

MIL-STD-167 Type I

Salt Spray:

FED-STD-151 Method 811

Environmental Characteristics:

Temperature Range:

-54°C to +65°C (Operating)

-62°C to +75°C (Storage)

Relative Humidity to 95%

## REFERENCES

Design Specification, Computer	SB 12292
Design Specification, Maintenance Console	SB 12403
Serial Input/Output Specification	SB 12407
Outline & Dimension Drawing	7073251

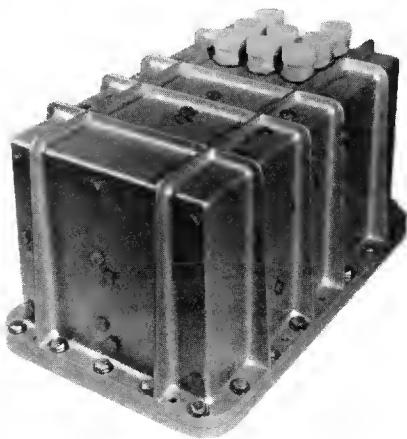


# PRODUCT INFORMATION

## AEROSPACE COMPUTER UNIVAC 1824

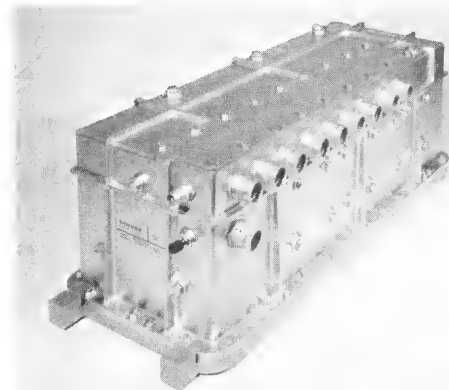
PX 4620

The UNIVAC 1824 Aerospace Computer family represents a variety of packaging configurations and special purpose adaptations of a basic general purpose processor. Since the inherent nature of missile systems are cyclic and mission limited, critical operating programs are stored in a non-destructive read-out (NDRO) portion of memory. Input/output is adapted and limited to the system instruments and equipment characteristics. Many variations therefore appear in packaging, characteristics and quantities of I/O Channels and of fixed (NDRO) and scratch pad (DRO) memories. Support equipment in the form of UNIVAC 1824 Aerospace Ground Equipment is required to maintain the hardware and/or change programs in the computer.

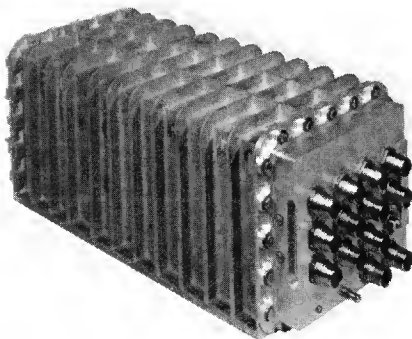


Basic Computer Case

Size: 9-1/2x15-1/4x8-1/2"  
 Weight: Approximately 11.8 pounds  
 Cooling: Achieved by conductive heating to base plate

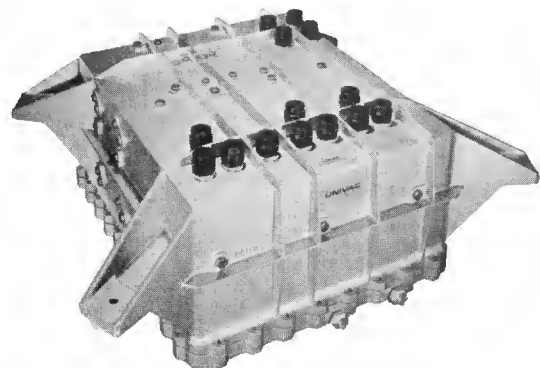
Expanded Memory  
Computer Case

Size: 9-3/8x7-3/4x23-1/4"  
 Weight: Approximately 13.3 pounds  
 Cooling: Conduction to base plate



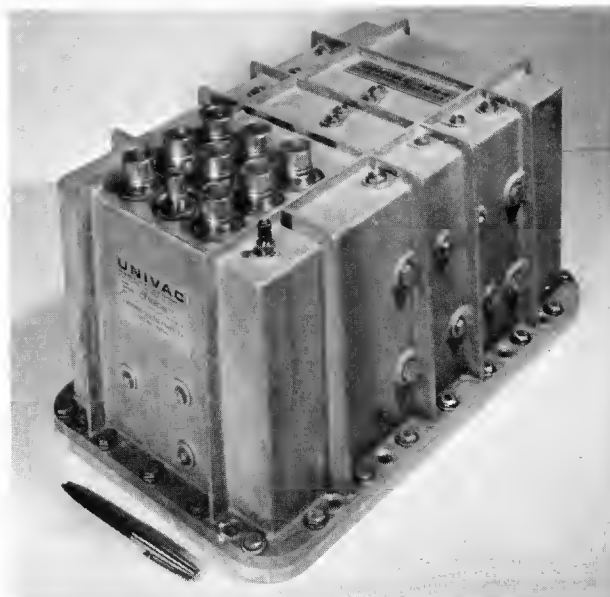
Computer and Expanded

Size: 9-1/4x9-1/2x24-1/2"  
 Weight: Approximately 19 pounds  
 Cooling: Achieved through the use of liquid Freon flowing through base plate

Expanded Input/Output  
Computer Case

Size: 18-3/4x18-1/2x9-1/4"  
 Weight: Approximately 25.2 pounds  
 Cooling: Liquid flowing through the base plate

## FUNCTIONAL CHARACTERISTICS



*\*For 4096-Word 48-Bit NDRO, 512-Word 24-Bit DRO Memory Configuration*

16-Bit Instruction Word  
24-Bit Data Word  
Memory – Magnetic Thin Film,  
random access

4 microsecond cycle time  
NDRO – Modular in 512 48-bit word groups to  
maximum of 8192 words  
DRO – Modular in 256 24-bit word groups to  
maximum of 2048 words  
3 Index Registers

Arithmetic – Two's complement, fractional, binary  
Instructions – 45 single address

### DEVELOPED INPUT/OUTPUT INTERFACE CIRCUIT CHARACTERISTICS

1. D to A Converters (8 bits)
2. A to D Converters (10 bits)
3. Incremental Processors (up, down, both)
4. Staticizer
5. Serializer
6. I/O Instructions – direct, indirect and up-  
date incremental input
7. Parallel Data Registers
8. Discrete (Pulse or DC)
9. Automatic Data Entry (Interrupt Controlled)
10. Long Cable Operation

### POWER REQUIREMENTS

85 watts      28 volts dc  $\pm$  4.5 volts

### MILITARIZED CONSTRUCTION

Designed for Aerospace Environment  
(MIL-STD-810); FED-STD-151;  
Classified Document for Nuclear  
Radiation; Meets Severe Re-Entry  
Environment)

### RELIABILITY

MTBF of 10,000 Hours (Calculated)

### MILITARIZED CONSTRUCTION

Microelectronic Integrated Circuits  
Flat Pack circuit assembly  
Ribbed, sealed, aluminum case enclosure  
Designed for Aerospace environment  
Specifications used for design guides  
MIL-STD-810  
FED-STD-151

### COMPACT\*

Size: 9.1"Hx9.4"Wx15.3"D  
Weight: 44.6 Pounds

### ENVIRONMENTAL TESTS

Vibration	20 g's 5-2000 Hz (0.4 inch DA) 0.6 g <sup>2</sup> /Hz random vibration
Shock	100 g's, 6.5 milli- seconds duration
Thermal Shock	-40°F. to +160°F.
Hi-Low Temp.	-65°F. to +160°F.
Leakage (Helium)	2.0 micron ft. <sup>3</sup> /hr
Humidity	95% at +160°F.
Magnetic Field	3 Gauss D.C.
Nuclear Radiation	Classified
RFI	USAF BSD 62-87
Operating Life Test	600 hr.
Centrifuge	100 g's, 3 min/axis

# UNIVAC 1824 PHYSICAL OPTIONS

SECTIONS	SIZE* (Cu. In.)	WT.*(Lbs.)	POWER* (Watts)
Median Version (System I Input/Output)			
Processor and Basic Input/Output	37	3.0	14.9
Memory — 196,608 bits NDRO, 12,288 bits DRO	278	18.4	22.6
Clock and Miscellaneous	33	1.25	8.0
Power Supply at 69% EFF	49	3.75	20.5
Case (includes space for three additional Input/Output Modules)	1300	11.75	—
Miscellaneous	—	4.2	—
TOTALS		42.35	66.0
Memory Options			
Memory			
Minimum Memory — 24,576 bits NDRO, 6,144 bits DRO	145 ①	10.3	20.5
Maximum Memory — 393,216 bits NDRO, 49,152 DRO	486 ②	30.8	27.2
Core Memory — 131,072 bits DRO	278 ①	9.2	45.6
Core Rope — 98,304 bits NDRO, 24,576 DRO (Film)	189 ①	11.6	45.0
Input/Output Optional Additions			
Systems III, IV, VI three Input/Output Modules (Inertial Guidance)	+ 18 ①	+ 2.25	+ 13.1
System VII Guidance and Flight Control	+ 1900 ③	+ 52.2	+ 95.0
System V Advanced Inertial Guidance	+ 340 ①	+ 9.4	+ 40.0
System II Special Inertial Guidance	+ 770 ④	+ 15.3	+ 10.0

NOTE: CASES

① Fit in basic case	1300	11.75
② Fit in Expanded Memory Case	1640	11.3
③ Fit in Expanded Input/Output Case No. 1	2070	19.0
④ Fit in Expanded Input/Output Case No. 2	3200	25.2

\* Size, Weight, and Power can be reduced depending on the nature of environmental characteristics.

## 1824 SUPPORT EQUIPMENT



1824 SUPPORT EQUIPMENT

### Aerospace Ground Equipment (AGE)

Maintenance and operational control are performed entirely by using the AGE which is designed in a configuration that meets the particular 1824 systems requirements. The nominal set of facilities built into the AGE include:

- Keyset Panel
- Display Panel
- Operator's Panel
- Maintenance Panel
- Simulator Panel
- Paper Tape Reader
- Paper Tape Punch
- Printer

Loading and modifying programs in the electricity alterable NDRO memory and all operational tests, simulations, debugging and maintenance are done with the computer attached to the AGE. One version of this equipment is pictured.

# PRODUCT INFORMATION

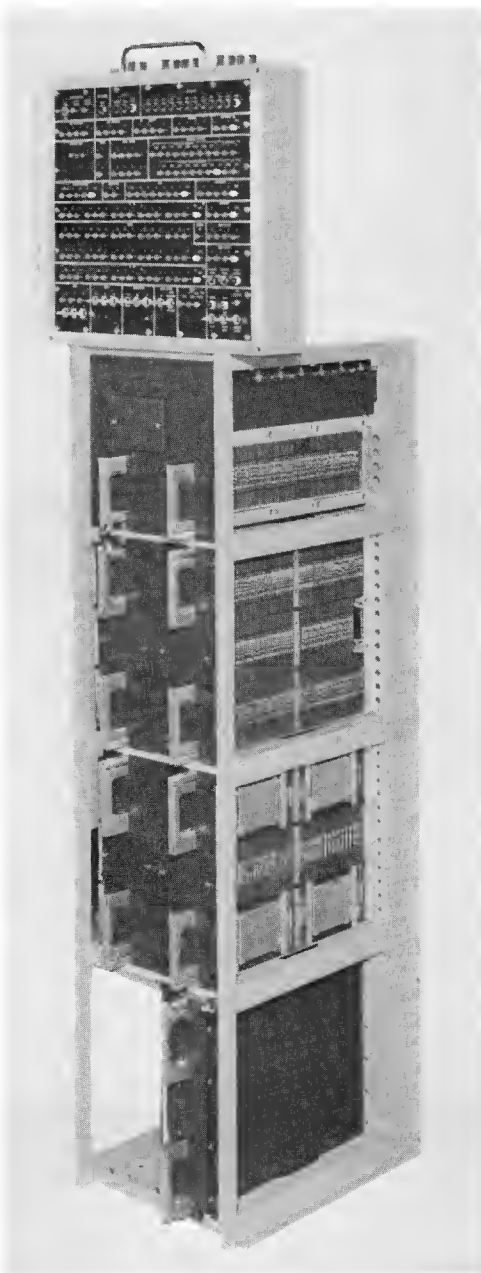
## UNIVAC 1830A AVIGNICS COMPUTER CP-901/(V)/ASQ-114(V)

PX 4118F

The UNIVAC 1830A is a modularized and more capable version of the 1830 (CP-823V) computer designed in 1967 for airborne applications with high processing requirements. Its basic instruction repertoire corresponds to that of the 1206 and 1212 family with additional instructions for the advanced features of page addressing. The page mode and the normal addressing mode can be used for operation within the first 32K word memory. Memories larger than 32K words require the page addressing mode.

Microelectronic circuitry packaged in functional modules permits assembly of a variety of configurations. The modules in a computer consist of:

- |                               |                       |
|-------------------------------|-----------------------|
| A. I/O Section                | D. Power Supply       |
| B. Central Processor          | E. Console (Optional) |
| C. 16K Memory Module (1 to 8) | F. Frame              |



### FUNCTIONAL CHARACTERISTICS

#### 30-BIT WORD LENGTH

- Single Word
- Arithmetic
- Input/Output Transfer

#### MEMORY

- Magnetic Core
  - 4K to 65K Words (Expandable to 131K)
  - 512 Words NDRO (Core Rope Bootstrap)
  - 2 Microseconds Cycle Time without Overlap
  - 1 Microsecond (Effective) Cycle Time with Overlap

#### SEVEN INDEX REGISTERS

- Hardware Index Registers (15 Bits)

#### 70 SINGLE ADDRESS INSTRUCTIONS

- 7 Branch Designator
- 7 Operand Interpretation Designators

#### TIMING DEVICES

- (Time Increment of 1/1024 Second)

#### INPUT/OUTPUT CAPABILITIES (Buffered)

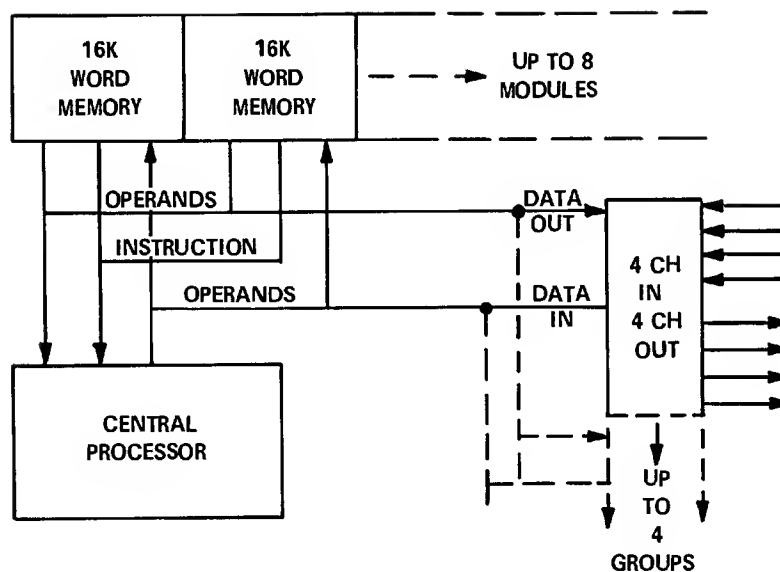
- 16 I/O Channels (Maximum)
- Automatic Priority Determination
- ESA and ESI (Optional)

#### INTERRUPTS

- 4 Internal
- 5 I/O (Unique Types)

#### INTERCOMPUTER

- On Any Channel



## PHYSICAL CHARACTERISTICS

### MILITARIZED CONSTRUCTION

(MIL-E-5400)

### RELIABILITY

MTBF of 2000 Hours (Calculated)

Cooling: Heat conduction via cold plates to heat exchanger. Cooling fan is a part of the computer or externally located.

Unit Size	Number of Units Required	Weight/Unit (lbs)	Weight/Total No. of Units (lbs)			
			16K Memory	32K Memory	48K Memory	65K Memory
Central Processor 14.4" x 5.5" x 12.6"	1	33.3	33.3	33.3	33.3	33.3
Memory 14.4" x 5.5" x 12.6"	1-4	32.7	32.7	65.4	98.1	130.8
Input/Output 11.0" x 10.6" x 16.5"	1	28.4	28.4	28.4	28.4	28.4
Power Supply 14.4" x 3.9" x 12.6"	1	30	30	30	30	30
Console 5.5" x 16.8" x 17.5"	1	36.3	36.3	36.3	36.3	36.3
Frame (65K capacity) 17.68" x 13.43" x 50.97"	1	51	51	51	51	51
Cable Assembly	4	3	12	12	12	12
Fan Assembly & Tools		15	15	15	15	15
<b>TOTAL COMPUTER WEIGHT</b>		<b>229.7</b>	<b>238.7</b>	<b>271.4</b>	<b>304.1</b>	<b>336.8</b>
<b>115V, 400 Hz, 3 PHASE</b>			<b>POWER (NOMINAL)</b>			
<b>UNIT ASSEMBLY</b>			<b>POWER REQUIRED (WATTS)</b>			
			16K Memory	32K Memory	48K Memory	65K Memory
Central Processor			190	190	190	190
Memory			100	200	300	400
Input/Output			80	80	80	80
Power Supply			165	208	250	291
Console			15	15	15	15
<b>TOTAL POWER REQUIRED/COMPUTER</b>			<b>550</b>	<b>693</b>	<b>835</b>	<b>976</b>

MIL-C-8 1332A (AS)

# PRODUCT INFORMATION

## UNIVAC 1830-B MILITARY COMPUTER

### Product Description

PX 6177

The 1830B is a ruggedized version, and shipboard counterpart of the 1830A Avionics Computer. Its functional modules are packaged in a cabinet that is ruggedized for installation and operation where heavy shock and other adverse environmental conditions are expected. A lower center of gravity is achieved in the 3 x 3 module arrangement. This 1970 development included some enhancements in functional capability — e.g., increased power supply capability, optional control memory, non-bussed output channels, etc. The modules of the computer consist of:

- |                              |                           |
|------------------------------|---------------------------|
| A. Central processor and I/O | D. Power Supply No. 2     |
| B. 16K Word Memory Module    | E. Maintenance Console    |
| C. Power Supply No. 1        | F. Cabinet and I/O Module |

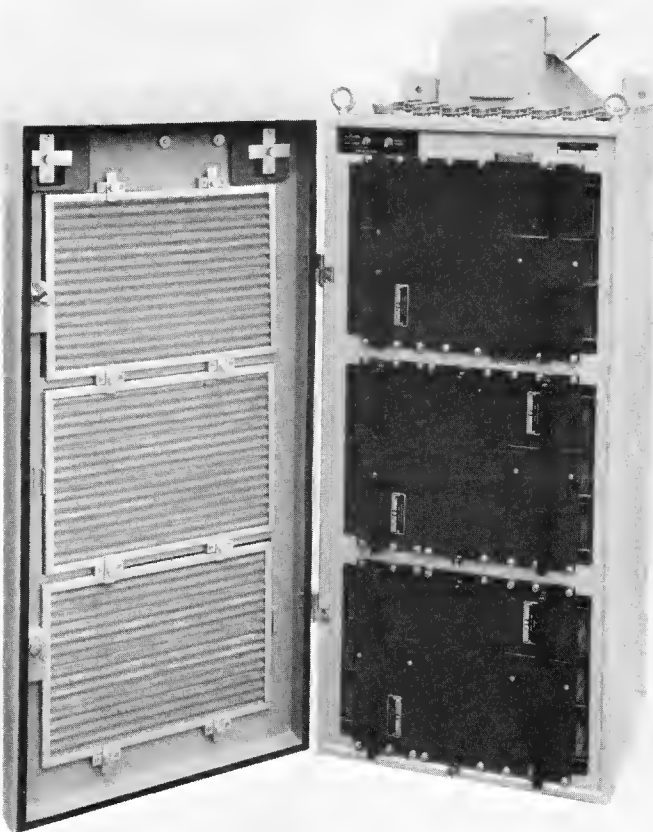


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1830-B COMPUTER

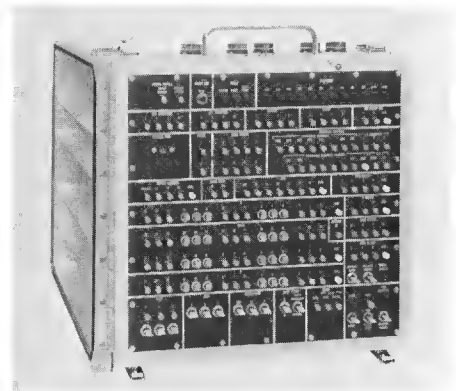
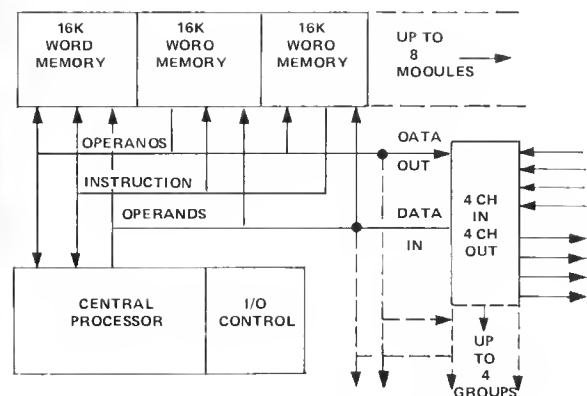


PHOTO NO. 4194

MAINTENANCE PANEL



FUNCTIONAL DIAGRAM

## FUNCTIONAL CHARACTERISTICS

### 30-BIT WORD LENGTH

Half word operand option

### MEMORY – DRO CORE

4096-Word Stacks in 16K Word Modules  
Expandable in 16K Banks  
2 Microsecond Cycle Time  
Power Loss Protection

### MEMORY – NDRO CORE ROPE

512 30-bit Words  
Bootstrap  
Load Failure Analysis

### I/O CONTROL MEMORY OPTION

48 words in I/O Module  
Integrated Circuit Elements

### CONTROL

Memory Overlap – 2 or more Modules  
Memory Write Lockout – Page Mode  
7 IC Index Registers  
Real-Time Clock 102.4K counts/sec.  
Count Down Clock Interrupt  
Power Failure, Power On Interrupts  
Program Fault Interrupt  
External Clock Option to 102.4KHz  
76 Basic Instructions  
Addressing Capability  
Direct Addressing Mode – 32K words  
Page Addressing Mode – 131K words

## INPUT/OUTPUT

4, 8, 12 or 16 I/O Channels  
30-bit Parallel Interface  
32K word Memory Addressability  
131K word Addressability with Optional  
Control Memory  
5 Interrupts per Channel  
Operating Modes  
Normal Buffer  
ESI – Optional  
ESA – Optional  
Intercomputer – Optional  
Automatic Priority Determination  
Transfer Rates – words per second

Interface Option	Single Channel	Multi-Channel
- 3 volt	167,000	500,000
+3.5 volt	167,000	500,000
-15 volt	38,400	500,000

## PHYSICAL CHARACTERISTICS

Computer modules are contained in a welded aluminum frame cabinet that incorporates a slide out I/O module in the upper right position and the I/O connectors and cooling air exhaust on top. Each computer module slides in from the front and makes electrical contact with rear cabinet receptacles when inserted. Printed circuit cards and other subassemblies in modules transfer heat by thermal conduction to cold plate heat exchangers that form one cover for the module. Cabinet cooling fans circulate air through the ribbed heat exchangers.

Specifications and standards used as design guides:

General: MIL-E-16400  
RFI: MIL-I-16910  
Shock: MIL-S-901 Class I Medium Weight  
Vibration: MIL-STD-167 Type I  
Waterproofing: MIL-STD-108  
Salt Spray: MIL-STD-151 Method 811  
Environmental Characteristics:  
Operating Temp. -10°C to +54°C  
Storage Temp. -55°C to +75°C  
Relative Humidity to 95%  
Power: MIL-STD-761B  
115 Volt or 115/208 Volt  
400 Hz, 3 Phase  
MTBF: Calculated for 32K Memory  
Computer: 1350 hours  
MTTR: 30 minutes



## SIZES, WEIGHTS AND POWER CONSUMPTION

Module/Dimensions depth x width x height inches/(cm)	Number of Modules Required	Weight per Unit-Pound (kg)	Weight Total Number of Modules Pounds/(kg)			
			16K	32K	49K	65K*
Central Processor 14.4 x 5.5 x 11.4 (36.6 x 14.0 x 29.0)	1	34 (15.4)	34 (15.4)	34 (15.4)	34 (15.4)	34 (15.4)
Memory 14.4 x 5.5 x 11.4 (36.6 x 14.0 x 29.0)	1-4	34.5 (15.6)	34.5 (15.6)	69 (31.3)	103.5 (46.9)	138 (62.6)
Power Supply No. 1 14.4 x 5.5 x 11.4 (36.6 x 14.0 x 29.0)	1	33 (15.0)	33 (15.0)	33 (15.0)	33 (15.0)	33 (15.0)
Power Supply No. 2 14.4 x 5.5 x 11.4 (36.6 x 14.0 x 29.0)	1	45 (20.4)	45 (20.4)	45 (20.4)	45 (20.4)	45 (20.4)
**Maintenance Panel 5.5 x 17.4 x 16.7 (14.0 x 44.2 x 42.5)	1	44** (20.0)	44 (20.0)	44 (20.0)	44 (20.0)	44 (20.0)
***Cabinet with Door 21.5 x 20.0 x 43.1 (54.6 x 50.8 x 109.5)	1	187*** (84.8)	187 (84.8)	187 (84.8)	187 (84.8)	187 (84.8)
TOTAL COMPUTER WEIGHT – POUNDS (kg)			377.5 (171.2)	412 (186.9)	446.5 (202.5)	481 (218.2)
POWER CONSUMPTION – NOMINAL WATTS			950	1100	1250	1350
– MAXIMUM			1130	1360	1590	1700
115 Volt, 400 Hz, 3 phase or 115/208 Volt, 400 Hz, 3 phase						
Add 70/90 watts for optional control memory Add 50/65 watts for each optional -15 volt 4 channel group Nominal power factor 0.9; minimum power factor 0.8						

\*Maximum for the cabinet  
 \*\*With four 4.5 foot cables  
 \*\*\*With fan assembly and input/output module

## REFERENCES

Design Specification	SB 10247
Acceptance Specification	SB 10612
Technical Manual	PX 5981
	PX 6117
Maintenance Diagnostic (-00,-01)	PX 6204
Bootstrap Program	PX 5949
Block Diagram Drawing	7216241
Outline Dimension Drawing	7216129
External Wiring Diagram	7216249
NDRO Assembly	7074003

# PRODUCT INFORMATION

## UNIVAC 1832 AVIONICS COMPUTER AN/AYK-10(V)

PX 5627

The UNIVAC<sup>®</sup> 1832 computer is a dual processor designed to meet the high data processing requirements of systems aboard military aircraft. Its central processor is a functional equivalent of the AN/UYK-7 central processor. High density microelectronic circuits are packaged in physical and functional modules which in turn are assembled in a cabinet that is fitted to an aircraft installation. Modules are logically interconnected and powered to permit a "degraded mode" of operation for added reliability. Input/output communication provides parallel, serial, and special purpose transfer capabilities.

The 1832 computer is configured from the following three functional modules as required:

- Central Processor, Input/Output Controller and Input/Output Interface
- 32K Word Memory Unit
- Power Supply Unit with Two Power Supplies

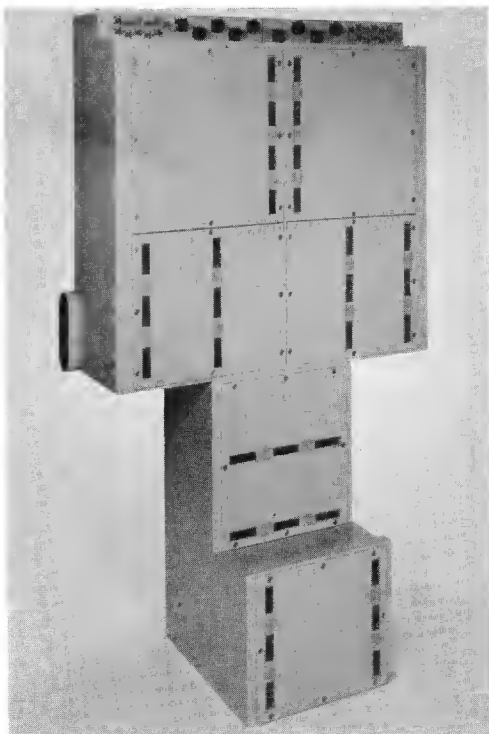
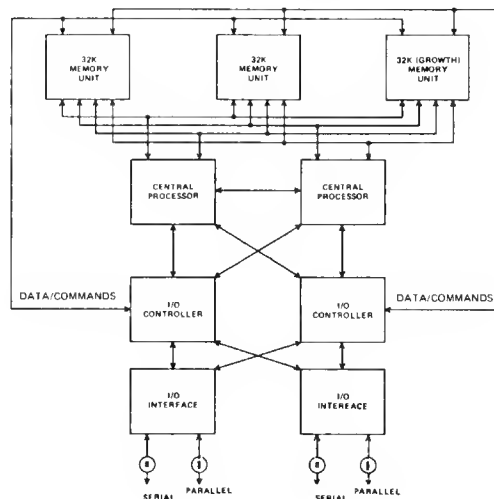


Photo No. 1932-4



Functional Diagram

### GENERAL FUNCTIONAL CHARACTERISTICS

Modular functional architecture  
Asynchronous intermodule communication  
Multiprogramming and dual processor capability  
Overlapped operation, two or more 32K memory modules

Dynamic error and status registers  
Memory addressing to 262,144 words  
Built-in-test equipment (BITE)  
Degraded performance operating mode

**Built-in-test equipment monitors**

- Processor-memory references
- Main clock timing
- Illegal function codes
- Memory parity
- Memory timing
- I/O parity
- PS output voltages

**MEMORY MODULE**

- Mated film storage elements
- 32,768 words per module
- 16,384 word operation (degraded mode)
- Six access ports per 16K bank with priority net selection
- 750 nanosecond read-write cycle time
- 36 bit words — 32 data, 4 parity bits
- Quarter and half word packing (operand)

**CENTRAL PROCESSOR**

- 133 basis whole and half word instructions
  - Direct or indirect addressing
  - Variable length character addressing
  - Privileged instruction set
- Task and interrupt operating states
  - Interrupt mode monitor clock
  - 2 sets of 7-index and 8 base registers
  - 2 sets of 8-addressable accumulators
- Decrementing monitor clock at 1024 counts/sec
- Memory lockout registers — variable blocks
- Interface capability
  - 8 memory modules maximum
  - 2 I/O controllers maximum
- NDRO memory 512 words
  - Initial load program
  - Fault analysis and recovery
  - Hardware diagnostics
- Arithmetic
  - 32-bit parallel, one's complement binary
  - Fixed and floating point hardware
  - 8-, 16-, 32- or 64-bit operands

**INPUT/OUTPUT CONTROLLER**

- Controlled by two central processors
- Controls two interface adapters
- Direct access data transfers
- Programmed operations with command chaining capability
- Repertoire of 25 basic instructions
- Integral control memory
  - Buffer control words
  - Command address pointers (function control words)
  - Clock storage (2)
  - Chain base address storage (16 )
- Internal RTC — 1024 counts per second
- Operating modes
  - Normal buffer
  - Continuous transfers via command chaining
  - External specified index
- Input/Output interface adapter
  - Serial-parallel conversion (vice-versa)
  - Asynchronous transfers with channels
  - Transfer capacity: 667K words per second per controller
  - Redundant power from 2 PS
- Channels
  - 1 or 2 bidirectional parallel 167K words/second transfers
  - Up to 10 bidirectional serial special purpose types
  - 6 million bits/second transfers
  - 0 to +3.9 volt signal levels

**POWER SUPPLY**

- 2 ac to regulated dc converters in 1 unit
- dc-dc converters in functional modules
- Overload protection
- Abnormal power detection
  - Interrupt central processor
- Automatic computer start and restart
- Energy storage:
  - For 250 microseconds after input power loss

## PHYSICAL CHARACTERISTICS

1832

Logic cards, memory stacks and power converter are assembled in drawer modules with the inter-connecting harness an integral part of the main frame structure. Integrated circuit and discrete components are mounted on 6" x 6" printed circuit cards that terminate in 112 pin connectors. Cooling is accomplished by thermal conduction to coldplate heat exchangers that are cooled by an external air supply.

### MODULE DATA

Item	Part Number	Weight (Pounds)
Main Frame (Cabinet)	7131850-00	103.3
Power Supply	7131700-00*	32.5
Power Supply	7131700-01	32.5
Central Processor		
I/O Controller		
I/O Interface	7131000-00	44.1
32K Memory	7131500-00	44.4
Dc-dc Converter (CP)	7511300-00	6.9
Dc-dc Converter (I/O)	7511200-00	6.9
Dc-dc Converter (Memory)	7131775-00	4.5

\*Has space for an additional switching regulator

### POWER REQUIREMENTS:

115/208 volt, 3 phase, 400 Hz per MIL-STD-704			
Power consumption (watts)	Average	Peak	P.F.
for 65,536 word memory computer	2100	2300	0.8
for 98,304 word memory computer	2300	2550	0.8
Warm-up time from -20°C	2 minutes		
Warm-up time from -54°C	15 minutes		
Cooling air supply — 6 pounds/min/kw of 60°F to 80°F air			

MTTR using Diagnostics  $\cong$  16 minutes

MTTR using Manual Procedures  $\cong$  32 minutes

Max TTR using Diagnostics  $\cong$  42 Minutes

Max TTR using Manual Procedures  $\cong$  60 minutes

Basic configuration consists of a cabinet with:

2 — CP, IOC, IOA modules

2 — 32K word memory modules

1 — power supply module

### SPECIFICATIONS AND STANDARDS

#### USED FOR DESIGN OBJECTIVES

General construction: MIL-E-5400K

Electromagnetic interference: MIL-STD-461

WR-101 Part I

Amendment I

Environmental: Class I(X) MIL-E-5400

MTBF per 5.1.9.1 of MIL-STD-785: 350 hours

MTBF per test method MIL-STD-781:

225 hours

### REFERENCES

Design Specification

SB-12414

Outline and Dimension Drawing

7131833G

Configurations and modular arrangements other than that defined by Univac drawing 7131833G can be provided.

# PRODUCT INFORMATION

## UNIVAC 1240 MAGNETIC TAPE UNIT (RD-270(V)/UYK)

PX 3221

Standard industry compatible magnetic tape reels and read/write formats were introduced into a UNIVAC-sponsored, military type, magnetic tape peripheral development in 1963. Although not fully militarized, the 1240 Magnetic Tape Units supply a military market with compatibility, versatility and a great amount of capability. Two to sixteen tape transports can operate from one control unit, in the base cabinet, that occupies one computer channel. Two computer operation (duplexing) is not provided. Two instruction words are required to initiate an operation: one addresses the unit and the second specifies the function. The 1240 is available in two-transport and four-transport, air cooled, cabinet configurations.

### FUNCTIONAL CHARACTERISTICS

#### TAPE

Width: ½ inch

Length: 2400 feet, 1-½ mil

Wind: "A" wind, oxide surface in

Reels: 10-½ inch, compatible hub, payout reel above

#### TAPE SPEED

Read/write forward: 112.5 ips

Backspace: 112.5 ips

Rewind: 225 ips

#### RECORDING TECHNIQUES

Method: NRZI Post – write read for parity

No. of tracks: 7 (6 data, 1 parity)

200, 556 bpi (program controlled)

Format: Odd or even lateral parity

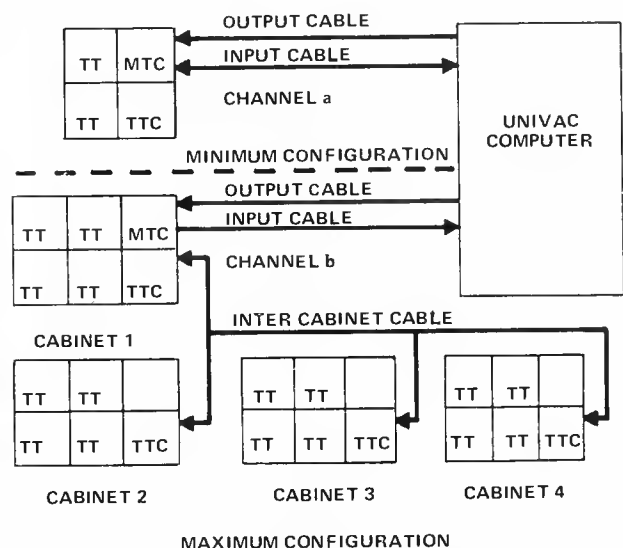
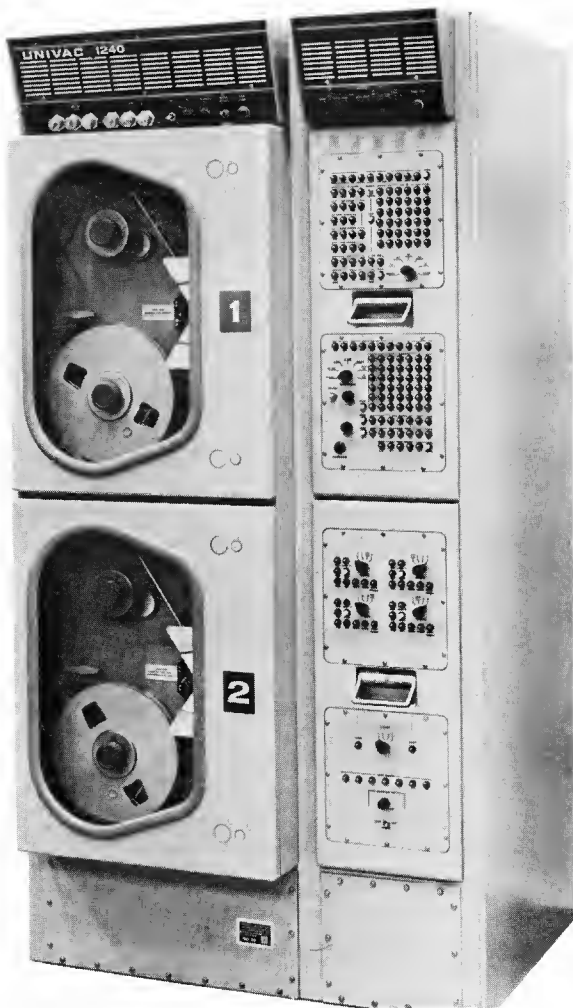
(Program controlled): Bioclock or redundant octal frame Modulus 3, 4, 5 or 6

Block length: Variable (by word)

Interblock gap (IBG): ¾ inch (industry compatible)

Head arrangement: Dual gap read/write

Full width DC erase



### FUNCTIONAL DIAGRAM

## FUNCTIONAL CHARACTERISTICS (1240 Cont)

### TRANSPORT CHARACTERISTICS

Tape drive: Dual capstan, pinch rollers  
Tape reservoir: Tension arms (servo controlled)  
Tape sensors: BOT, EOT, Low Tape  
File protect: Absence of write enable ring on Master Reel

Write function: Forward only  
Write start delay: IBG — 3.75 ms  
BOT — 27.0 ms  
Search function: Forward and backward  
"Find" on bit-on-bit equality or on greater-than-or-equal-to  
Interface word length: 18, 24, 30, or 36 bits (one only)  
Interface signal voltage: N3 or N15 (one only)  
Frame transfer rate: 200 bpi density — 22,500 (frames per second): 556 bpi density — 62,500  
Words per second: 3,750 to 20,800  
Transports per control: 2 to 16

### CONTROL UNIT CHARACTERISTICS

Read function: Forward only  
Read start delay: IBG — 2.0 ms  
BOT — 15.0 ms

## PHYSICAL CHARACTERISTICS

The requirements of MIL-E-16400 were used as a design goal for the 1240 Magnetic Tape Unit. A ruggedized welded aluminum main frame houses the tape transports and assemblies of MIL-approved CP642B type circuit modules that make up the Control Unit and Interface Logic. Front access is provided via the pullout drawer type, wire wrapped chassis. Cabinets contain 2 or 4 tape transports.

	<u>2 Transport</u>	<u>4 Transport</u>
Size (inches)	72Hx37Wx30D	72Hx60Wx30D
Weight (pounds)	1150	1900
Cooling air (CFM)	800	1400
Input Power (KW)		
115 vac, 400 Hz, 3 ph	0.6	0.6
115 vac, 60 Hz, 1 ph	2.8	5.5
200 vac, 400 Hz, 3 ph	(1240C, PRD only)	

## REFERENCES

DS 4661                      Design Specification

## MANUALS

PX 3524-0-2                      1240 18-Bit Maintenance Test  
PX 3640-1-2                      1240 Magnetic Tape Unit, Vol. I  
PX 3640-2-2                      1240 Magnetic Tape Unit, Vol. II  
PX 4420-1-2                      1240 Diagnostics, Vol. I  
PX 4420-2-2                      1240 Diagnostics, Vol. II

### Outline and Dimension Drawings

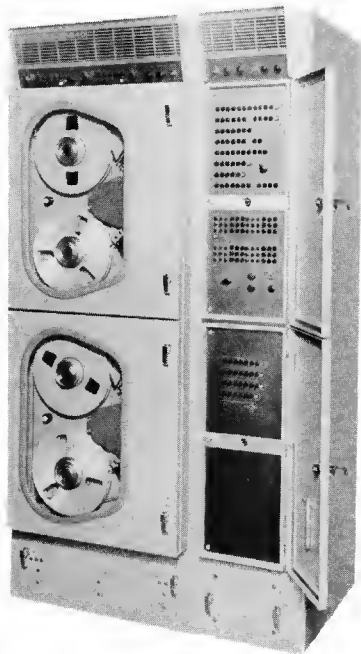
2 Handler                      7006650  
4 Handler                      7006651

# PRODUCT INFORMATION

## UNIVAC 1540A MAGNETIC TAPE UNIT (RD-294(V)/UYK)

PX 3662

Requirements for a more rugged and faster magnetic tape unit than the 1240 units are reflected in the 1965 development of the UNIVAC 1540 magnetic tape peripheral units. Increased tape transporting speed, higher packing density (to 800 bpi) more rugged environmental characteristics and more functional capabilities are features of this generation product. Dual computer (duplexing) operation and the air or water cooled cabinet are standard options. Two to eight transports may be connected to one computer channel and are available in two-transport basic cabinet which encloses the control unit and the two-transport add-on cabinet. The 1540A reflects the 1967 improvement effort in making the device more reliable.



### FUNCTIONAL CHARACTERISTICS

#### TRANSPORT CHARACTERISTICS

Tape drive	Dual capstan, pinch rollers
Tape reservoir	tension arms (servo controlled)
Tape sensors	BOT, EOT, Low Tape
File protect	Absence of write enable ring on Master Reel

#### TAPE

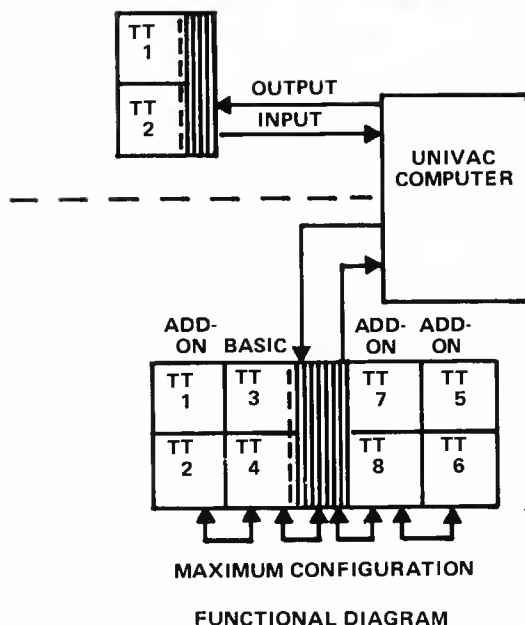
Width	1/2 inch
Length	2400 feet, 1.5 mil
Wind	"A" wind, oxide surface in
Reels	10-1/2 inch, compatible hub, payout reel above

#### TAPE SPEED

Read/Write forward	120 ips
Backread	120 ips
Rewind	240 ips
Start time	3.0 ms
Stop time	1.5 ms (from 120 ips)

#### RECORDING TECHNIQUES

Method	NRZI
No. of tracks	7 (6 data, 1 parity)
Density	200, 556, 800 bpi (program controlled)
Format	Odd or even lateral parity
(program controlled)	Biocidal or redundant octal frame modulus 3, 4, 5 or 6
Block Length	Read-Variable by frame
	Write-variable in computer word increments
Inter Block Gap (IBG)	3/4 inch (industry compatible)
Head Arrangement	Dual gap read/write
	Full-width DC erase
Post-Write Read	Read after write for parity check



**CONTROL UNIT CHARACTERISTICS (1540)**

Program compatible with UNIVAC 1240 by switch selection		Interface word length	18, 24, 30, or 36 bits (one only)
Write function		Interface signal voltage	N3 or N15 volts (one only)
Read function		Frame transfer rate (frames per second)	200 bpi density – 24,000 550 bpi density – 66,670 800 bpi density – 96,000
Write start delay	IBG – 4.5 ms	Word transfer rate (words per second)	18 Bit 30 Bit 36 Bit
	BOT – 24.0 ms		200 bpi 8,000 4,800 4,000
Search function	Forward and backward	Read Bias Control – Normal/High/Low by program selection	556 bpi 22,220 13,330 11,110
	"Find" on bit-by-bit equality or on greater-than-or-equal-to		800 bpi 32,000 19,200 16,000
Duplexing	Dual computer control by	Transports per Control Unit – up to 8	
	External function command		

**PHYSICAL CHARACTERISTICS**

	BASIC UNIT		ADD-ON UNIT	
	Air Cooled	Water Cooled	Air Cooled	Water Cooled
Size (inches)	72Hx38Wx30D	72Hx38Wx36D	72Hx26Wx30D	72Hx26Wx36D
Weight (pounds)	1400	1600	450	1100
Cooling Air (CFM)	600	—	400	—
Cooling Water (GPM)	—	4.0@70°F	—	4.0@70°F
Input Power (KW)				
115 vac, 400Hz, 3 ph	0.7	1.2	0.01	0.34
115 vac, 60Hz, 1 ph	3.3	3.2	3.3	3.2

Separate power cable to basic unit and to add-on unit.

**ENVIRONMENTAL CHARACTERISTICS**

Construction design of the 1540 included greater emphasis on the requirements of MIL-E-16400 and related specifications and standards. Tests performed provided data on its environmental characteristics in the following categories:

General Specification:	MIL-E-16400
Temperature:	
Operating	0° to 50°C
Non-Operating	-62° to -75°C
Relative Humidity:	Operation up to 95%, continuous and intermittent, including condensation in the form of water and frost
Enclosure:	MIL-STD-108 (Drip Proof)
Salt Spray:	Federal Std. No. 151, test Method 811
External Radiation:	MIL-I-16910
Shock:	MIL-S-901, Grade A, Deck mounted, Class II, Med. Weight
Vibration:	MIL-STD-167, Type I
MIL-approved circuit modules (CP-642B type).	

**REFERENCES:**

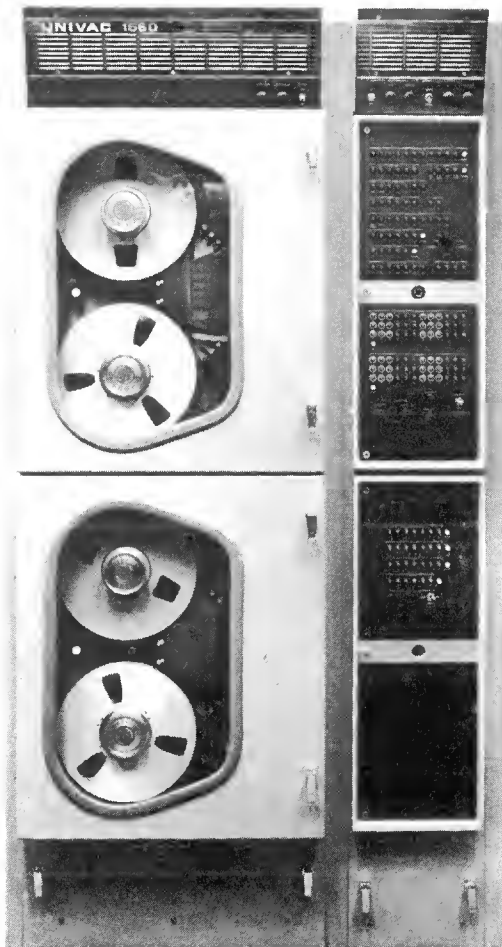
MANUALS	DESCRIPTION	
PX 3334-1-4	1540/41 Magnetic Tape Unit, Vol. I	Design Specification: DS4726, SB10110
PX 3334-2-4	1540/41 Magnetic Tape Unit, Vol. II	Outline and Dimension Drawing: Air = 7075029 Water = 7075030
PX 3644-0-1	1540 18-Bit Maintenance Test	
PX 3645-0-2	1540 30-Bit Maintenance Test	Installation Checkout Kit: Log 7441
PX 3873-0-1	Potter MT-120A Tape Transport	One-Year Spares Kit: Log 7505



# PRODUCT INFORMATION

## UNIVAC 1560 MAGNETIC TAPE UNIT RD-261/USQ-20

The UNIVAC 1560 Magnetic Tape Unit is a large capacity, special format, militarized storage device designed in 1962 to operate with the CP-642A/USQ-20(V) Computer as part of the Integrated Operational Intelligence Center. The tape unit records and retrieves 39-bit computer words on one inch tape at one of 32 discrete densities which are program selectable from 451 bpi to 1667 bpi. A redundant recording format is provided for increased reliability. The 1560 Magnetic Tape Unit houses two tape transports in a military cabinet with water cooling or air cooling.



### FUNCTIONAL CHARACTERISTICS

#### TAPE

Width	One inch
Length	2400 ft., 1.5 mil
Wind	"A" wind, oxide surface in
Reels	10-1/2 inch, compatible hub, payout reel below
Tape Markers	EOT, BOT-clear leaders

#### TAPE SPEED

Read/Write	30 ips Forward
Backread	30 ips Backward
Wind/Rewind/Search	180 ips Forward and Backward

#### RECORDING TECHNIQUES

Method	NRZI Read after Write for parity check
No. of Tracks	16 (15 data, 1 sprocket)
Density	451 bpi to 1667 bpi, program selectable
Frame Time at 30 ips	20 $\mu$ S to 74 $\mu$ S in increments of 2 $\mu$ S
Format	Normal — 2 frames per 30-bit word
(Program Selectable)	Redundant — 4 frames per 30-bit word, redundant recording Special — 2 frames per 30-bit word, no IBG, read only
Block Length	Variable in computer word increments
Interblock gap (IBG)	3/4 inch

#### TRANSPORT CHARACTERISTICS

Tape Drive	Dual Capstan, Pinch Rollers
Tape Reservoir	Tension Arms (servo controlled)
Tape Sensors	BOT, EOT, Low Tape, High Tape
File Protect	Absence of Write Enable Ring on Master Reel

## FUNCTIONAL CHARACTERISTICS (Continued)

### CONTROL UNIT CHARACTERISTICS

Read Function	Forward and Backward
Write Function	Forward only
Search Function	Forward and Backward Block Count
Interface Word Length	30 bits
Interface Voltage	-15
Frame Transfer Rate (frames per second)	13,500 to 50,000
Word Transfer Rate (words per second)	6,750 to 25,000 Normal Format 3,800 to 12,000 Redundant Format
Transports per Control Unit	2

### PHYSICAL CHARACTERISTICS

	Water Cooled	Air Cooled
Size (inches)	72Hx38Wx36D	72Hx38Wx32D
Weight (pounds)	1500	1500
Cooling Air (CFM)	—	600
Cooling Water (GPM)	4.0	—
Input Power (KW)		
115 vac, 400 Hz, 3 ph	1.4	0.6
115 vac, 60 Hz, 1 ph	2.0	2.2

### ENVIRONMENT CHARACTERISTICS

The following specifications were used as a guide for the design and construction of the 1560 Magnetic Tape Unit

Temperature:	MIL-E-16400 Class 4, operating 0° to 50°C, non-operating -62° to +75°C
Relative Humidity:	MIL-E-16400, operation up to 95% R.H., continuous and inter- mittent, including condensation in the form of water and frost
Enclosure:	MIL-STD-108 (Drip Proof)
Salt Spray:	Fed. Std. No. 151, Test Method 811
External Radiation:	MIL-I-16910
Shock:	MIL-S-901 Grade A, Deck mounted, Class II, Med. weight
Vibration:	MIL-STD-167 Type I
Inclination:	MIL-E-16400
MIL — approved circuit modules (CP-642A type)	

### CONFIGURATION OPTIONS

The following are the part numbers for the two versions of the 1560:

7038878	Air Cooled
7007800	Water Cooled

Reference: DS4634

# PRODUCT INFORMATION

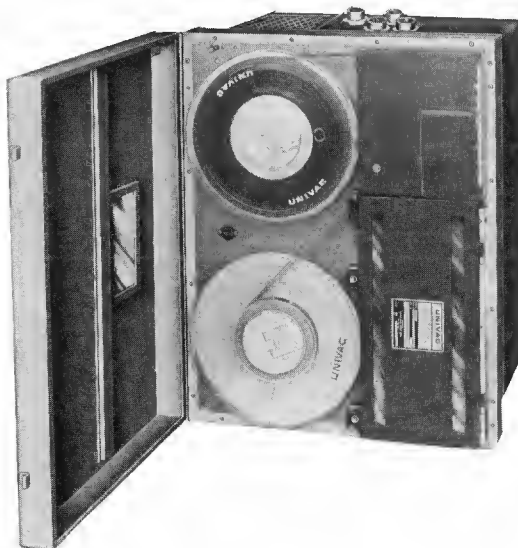
## UNIVAC 1840 MODULAR MAGNETIC TAPE SET

PX4949C  
PX 5923

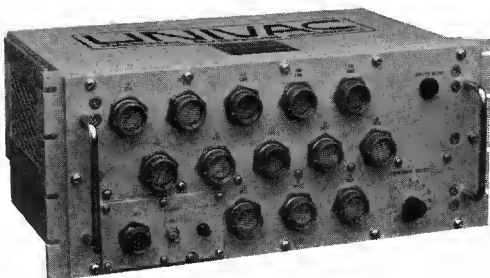
The need for a compact reliable magnetic tape unit adaptable to a variety of application in adverse environments prompted Univac to design the 1840 Modular Magnetic Tape Set (MMTS) in 1968. The set utilizes a new, compact tape transport designed and fabricated by UNIVAC FSD. New concepts in tape handling techniques were employed to produce a transport with vacuum buffers and still maintain industry compatible functional characteristics. The tape set consists of four basic modules: Control Unit, Remote Operator's Unit, Tape Transport and Maintenance Console. The modular nature of the tape set allows a broader range of applications in airborne, shipboard and mobile land installations, especially where conservation of space and weight is a basic requirement.



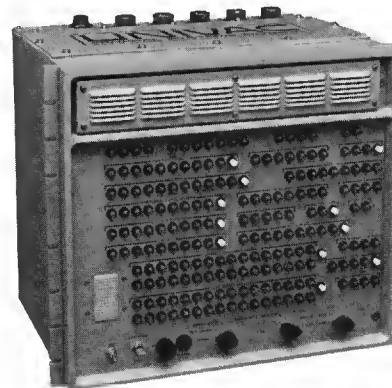
REMOTE OPERATOR'S CONTROL UNIT



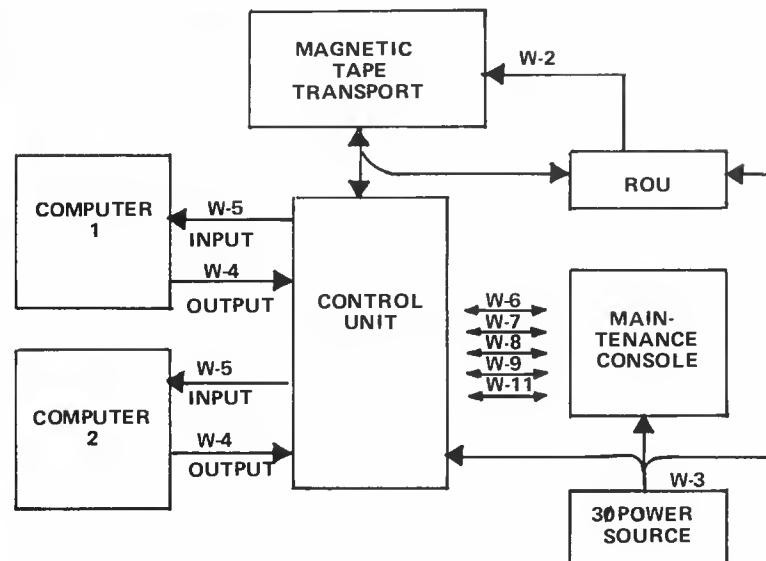
MAGNETIC TAPE TRANSPORT



CONTROL UNIT



MAINTENANCE CONSOLE



W-1 SIGNAL CABLE (BRANCHED)  
W-2 POWER CABLE  
W-3 POWER CABLE (BRANCHED)  
W-4, 5, 6, 7, 8, 9 & 10 SIGNAL CABLES

FUNCTIONAL DIAGRAM

## GENERAL ENVIRONMENTAL CHARACTERISTICS (1840)

### TAPE TRANSPORT MODULE

Contains one tape transport, servo mechanism associated read/write and transport control circuitry internal cooling system and power supply with overload, overvoltage and undervoltage protection.

#### TRANSPORT TYPE – UNIVAC SLC OEM

##### Tape and Reels – Industry Compatible

1/2 inch wide, 1.5 mil thick, "A" wind on reels to 10-1/2 inch diameter (2400')

Reflective markers for EOT and BOT

##### Tape Handling Methods

Single friction drive capstan, vacuum column tape reservoir and servo control, BOT and EOT sensors

Quick release, low profile, reel lock for 8 or 10-1/2 inch reels

Dual gap read/write head arrangement

Full width DC erase, 2000 hour minimum life

Tape life – More than 100,000 passes

Master Reel File Protect – write enable ring removed

##### Tape Handling Speed

Read/write at 75 inches per second (ips)

Rewind at 150 ips

6.4 ms start/stop time

##### Recording Techniques – Industry Compatible

NRZI, post write read for parity check on 7 channels (6 data + 1 parity) variable block length, 3/4 inch interblock gap (IBG), longitudinal parity checking. Optional 9 channel recording uses odd parity and 1/2 inch IBG.

### REMOTE OPERATOR'S UNIT

One Remote Operator's Unit is required for operating each tape transport. It provides all controls for changing and loading tapes, primary power switches, indicators and controls for operating either on-line or off-line with the Control Unit.

### MAINTENANCE CONSOLE MODULE

The Maintenance Console is used to simulate operating functions in a test mode and to show dynamic indications of subsystem operator for efficient troubleshooting and maintenance of the MMTS. It may, but need not be a part of the operating subsystem. Operating controls, indicators and test points are provided on the front, hinged door panel through which access is provided to all printed circuit cards and power supply in both the console and the inserted control unit. The unit is packaged in a dust covered free standing module or standard 19-inch rack mounting.

### CONTROL UNIT MODULE

Contains all interface and control logic for functional operation of the MMTS, power supply timing circuits, buffer registers and interface connectors for one or two computers, one to four Tape Transport Modules and for the Maintenance Console on which it is not dependent for operation.

##### Computer Interface Characteristics

Word Length: 18, 30 or 32 bits (one only by back panel wiring)

Signal Voltage: P3, N3 or N15 (one only by card interchange)

Control Lines: 2 Request, 2 Acknowledge  
External Function & Interrupt

Computer controlled functions – 1240/1540 compatible read, search or space file forward and backward; write forward, duplex control, format control (odd or even parity; 200, 556 or 800 bpi density), select transport 1, 2, 3 or 4 and rewind. The 9 channel option uses 200 or 800 bpi density

Interrupts – Errors detected, and status indication via interrupt word

Block length – Variable by frame

7 channel – any size

9 channel – 18 to 2048 data characters

## GENERAL ENVIRONMENTAL CHARACTERISTICS

### Attitude independent modules

#### Temperature

Continuous operation -54° to +55°C

Intermittent operation -54° to +71°C

Non-operating (storage) -62° to +85°C

#### Relative Humidity

Operating 20% to 90%

Nonoperating 0% to 100%

No resonant frequencies below 50 Hz

### MTT shock and vibration susceptibility

Withstands shock impacts without isolators

50 g perpendicular to plane of reels

25g parallel to long axis of tape deck

### Operating altitude

to 10,000 feet with standard case

to 70,000 feet with pressurized case

### ROU & CU

Operating altitude to 70,000 feet

### Shock

50g at 11 ms duration

## GENERAL PHYSICAL CHARACTERISTICS (1840)

The following specifications were used as guides for the design and construction of modules for the MMTS.

General Specifications	MIL-E-16400 (Amendment 4) and MIL-E-5400
Attitude	MIL-E-5400 Class 2
Temperature	MIL-E-5400 Class 1 (altitude to 10,000 ft)
Enclosure	MIL-STD-108 (Drip proof)
Salt Spray	FED-STD-151 Test Method 811
RFI	MIL-STD-461
Shock	MIL-S-901 Grade A, Deck Mounted and Class II
Vibration	MIL-STD-167, Type I MIL-E-5400, Curve IV

All modules are designed to fit a standard 19" rack mounting and with physical characteristics to withstand airborne and ship/shore mobile environments. Various packaging options are offered to meet customer requirements. These include open or dust covered modules for rack mounting heavy ruggedized enclosures for stand alone modules or ruggedized single cabinet assemblies integrating all modules. (See supplementary listing for fully documented options.)

### Size, Weight & Power

Dimensions in inches exclude connector and cable protrusions.

Power consumption in watts is maximum per module.

Weight in pounds is given according to configuration.

	MTT	ROU	CU	MC	UNIFIED MC-CU
Width	19.5	19.0	19.0	19.0	19.0
Height Without Air Filters	25.35 24.5	3.0	7.88	16.75	18.0
Depth	9.5	5.5	13.88	18.88	13.88
Weight (Baseline) Without Enclosure With Pressurized Case	130 120 150	2.75	40.0 32.0	42.0	75.0
Power (Maximum)	1100	2.0	250	100	250
MTBF—Calculated per MIL-STD-756A Ship/Shore (hrs) Airborne (hrs)	2283 588		1240 324	3925	
MTTR (minutes)	45		30	15	

#### Control Unit Back Panel Wiring Options:

Simplex or Duplex operation in either of

- 7 track, 18- or 30-bit interface
- 9 track, 18-, 30-, or 32-bit interface
- 7 track, 32-bit interface, 1540 mode

#### References:

SB 12215	Magnetic Tape Transport Design Characteristic Specification
SB 10330	MMTS 1840 Acceptance Procedure 30-bit Computer
SE 00150	MMTS 1840 Acceptance Procedure 18-bit Computer
SE 00151	MMTS 1840 Inspection spec.
SE 00122	MMTS 1840 Maintenance Console PN7601842
SE 00121	MMTS 1840 Control Unit PN7601841
SE 00120	MMTS 1840 Modular Magnetic Tape Transport PN7601840
SE 00114	MMTS 1840 Remote Operator's Unit PN7601843
SE 00101	Product Specification 1840 MMTS
PX 8211	Technical Manual, MTT and ROU
PX 8197	1840 System Manual

# PRODUCT INFORMATION

## UNIVAC 1232 INPUT/OUTPUT CONSOLE RD-271(V)/UYK

PX 3450

The first effort put forth by Univac to combine 5, 6, 7, and 8 level paper tape read/punch and keyboard/prINTER operations in a single peripheral device operating with a computer on a single input/output channel was in the development of the 1232 input/output console. Fielddata code was a strong contender for standardization during this 1962-1963 period. Although rather sturdy, the 1232 was not built with physical characteristics capable of meeting military specifications.



### FUNCTIONAL CHARACTERISTICS

#### CODES

Keyboard/prINTER  
Fielddata  
Reader  
Any 5, 6, 7 or 8 bit  
Punch  
Any 6, 7, or 8 bit  
5 bit optional

#### PRINTING

Speed  
10 characters per second  
Format  
10 characters per inch horizontally  
6 lines per inch vertically  
72 characters per line

#### PAPER

Page Printer  
Single-ply, white bond Teletype paper

#### TAPE

Read  
5, 6, 7, or 8 level oiled or dry paper or Mylar\*  
Punch  
6, 7, or 8 level oiled or dry paper 7/8" or 1" widths (5 level 11/16" optional)  
Speed  
Read at 300 characters (30 inches) per second  
Punch at 110 characters (11 inches) per second

#### CONTROL UNIT — COMPUTER INTERFACE

Character parallel transmission  
Function command output  
Interrupt  
Voltage level options: N3 volt or N15 volt

#### OFF-LINE OPERATIONS

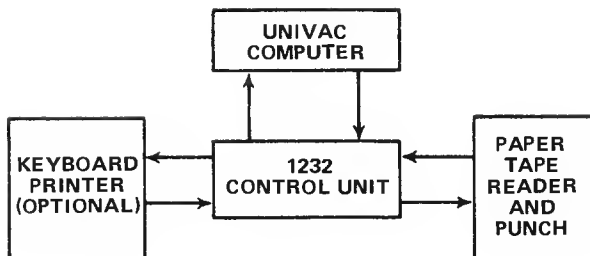
Reproduce punched paper tape (read and punch)  
Print on paper and/or punch paper tape from paper tape reader  
Print on paper and/or punch paper tape from keyboard

#### ON-LINE OPERATIONS (COMPUTER CONTROLLED)

Keyboard input to computer  
Paper tape reader input to computer  
Print and/or punch computer output data  
Print and/or punch keyboard input data  
Print and/or punch reader input data

Combined operations are performed at speed of the slowest operating device

\*Trademark of E.I. duPont deNemours



FUNCTIONAL DIAGRAM

8.69

## PHYSICAL CHARACTERISTICS

Controls and control unit are assembled in the upper part of the main cabinet with a Digitronics Reader Model 2500 and a Teletype Punch BRPE-11 (BRPE-9 for 11/16" tape) mounted directly below. The front, lower half of the cabinet is a bin for receiving the perforated tape and a power supply is mounted directly behind. A desk supporting the optional Teletypewriter Model 35ASR keyboard/printer is attached to the left side of the main cabinet.

### SIZE

Cabinet: 51"H x 29"W x 26"D  
Keyboard/Printer Desk: 29"H x 42"W x 24"D

### WEIGHT

Cabinet, desk and typewriter: 475 pounds  
Cabinet (basic unit only): 305 pounds

### POWER REQUIREMENTS

Logic: 115 volts  $\pm$  10%, 3 phase, 400 Hz, 250 watts  
Motors: 115 volts  $\pm$  10%, 1 phase, 60 Hz, 600 watts

### COOLING

Ambient air circulation at 240 cfm

### ENVIRONMENT

Operating temperature range: 0° to 40°C  
Relative humidity: to 95%  
Nonoperating temperature range (storage): -29° to 50°C

### MTBF

7200 hours exclusive of electromechanical devices

### REFERENCES

Design Specifications DS 4648, DS 4786, SB 10148  
Acceptance Specifications DS 4682, DS 4700, SB 12135

### MANUALS

### TITLE

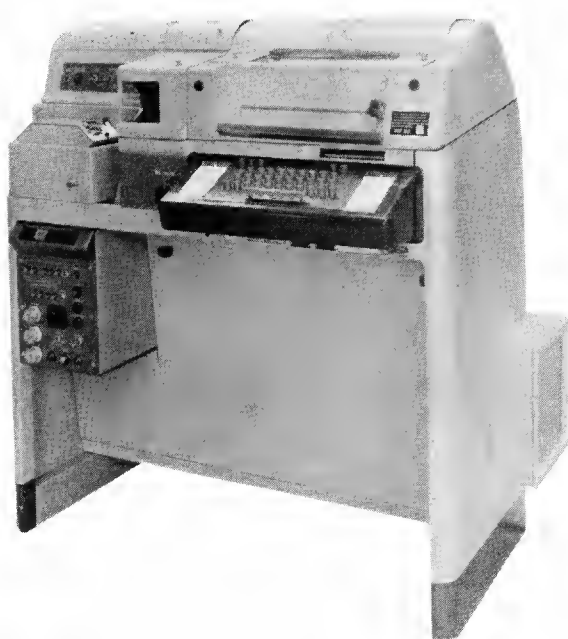
PX 2527-0-3	1232 I/O CONSOLE
PX 3871-0-1	DIGITRONICS READER, MODEL 2500
PX 3865-0-1	TELETYPE HIGH-SPEED TAPE PUNCH
PX 3866-0-1	TELETYPE, PARTS, HIGH-SPEED TAPE PUNCH
PX 4424-0-1	TELETYPE MOTOR UNITS
PX 3869-1-1	TELETYPE, MODEL 35 TELETYPEWRITER VOL. I
PX 3869-2-1	TELETYPE, MODEL 35 TELETYPEWRITER VOL. II
PX 4423-0-1	TELETYPE, PARTS, MODEL 35 PAGE PRINTER
PX 3719-0-2	1232 30-BIT MAINTENANCE TEST
PX 3930-0-1	1232 18-BIT MAINTENANCE TEST
PX 3948-0-1	1232 MAINTENANCE STUDY GUIDE
PX 4363-0-1	1232 30-BIT DIAGNOSTIC TEST

# PRODUCT INFORMATION

## UNIVAC 1257/1259 TELETYPEWRITER SET (OJ-93(V)/TSQ-90(V))

PX 3412

The UNIVAC Teletypewriter Set consists of a Teletype\* ASR-28 Send-Receive set modified for interfacing with a UNIVAC Adapter that performs the serial-parallel and parallel-serial conversion and control for communication with a Univac computer. The 1257 performs the send-receive function under control of a two-position toggle switch. The 1259 performs the send-receive function under control of circuitry in the Adapter. An Auxiliary Line Relay connects the 1257/1259 to other teletypewriters in the system or to a full duplex common carrier communication line.



### FUNCTIONAL CHARACTERISTICS

#### DATA TRANSMISSION

5-bit parallel input and output (computer)  
7.0 or 7.42 unit start-stop pattern (line)  
60, 75, 100 or 200 words per minute  
Mark = 60 or 20 ma  
Space = 0.0 ampere

#### PRINTER

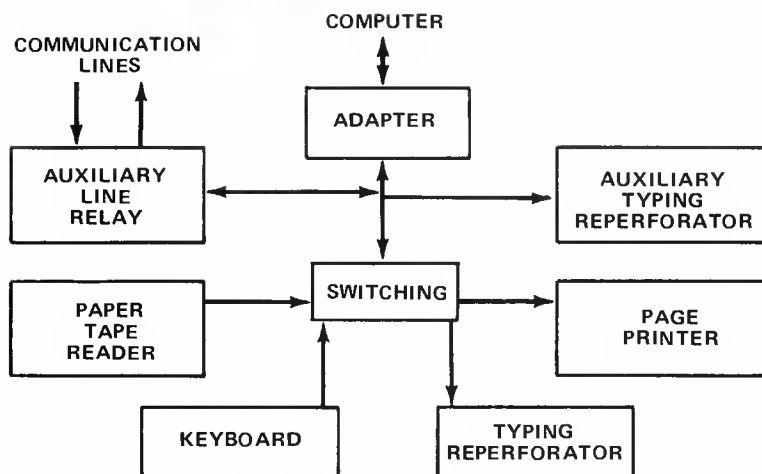
72 characters per line  
8-1/2-inch wide paper

#### OFF-LINE OPERATIONS

Printed and punched paper tape preparation  
Keyboard transmission  
Simultaneous keyboard transmission and paper tape preparation  
Automatic tape transmission  
Page copy of either incoming or outgoing messages

#### ON-LINE OPERATIONS

Keyboard entries to the computer  
Paper tape entries to the computer  
Simultaneous keyboard entries to computer with paper tape copy and/or page copy and/or external line transmission  
Simultaneous paper tape entries to the computer with page copy and/or external line transmission  
Data outputs from the computer to page printer and/or paper tape copy and/or external line transmission



FUNCTIONAL DIAGRAM

8.69



## PHYSICAL CHARACTERISTICS

The UNIVAC Adapter is built to fit into the Teletype ASR-28 cabinet and with MIL-E-16400B as a design goal. As a unit, therefore, the 1257 or 1259 Teletype Set is ruggedized to the extent of the electromechanical device's ability to withstand environmental conditions.

### DIMENSIONS

Height: 41 inches  
Depth: 24 inches  
Width: 40 inches

### WEIGHT

305 pounds

### COOLING

Forced air @ 280 CFM

### TEMPERATURE

0° to +50°C operating  
-29° to +50°C nonoperating

### POWER REQUIREMENTS

115 volts  $\pm 10\%$ , 400 Hz  $\pm 5\%$ , 3 phase, 300 watts  
115 volts  $\pm 10\%$ , 60 Hz  $\pm 5\%$ , 1 phase, 200 watts

### REFERENCES

Specifications: See configuration listing

#### MANUALS

#### TITLE

PX 2729-0-2	1206 Teletypewriter
PX 3379-0-2	1259 Teletypewriter
PX 3721-0-2	1259 30-Bit Maintenance Test
PX 4271-0-1	1259 18-Bit Maintenance Test
PX 3870-1-1	Teletype Bulletin 270B Vol I
PX 3870-2-1	Teletype Bulletin 270B Vol II
PX 2870-3-1	Teletype Bulletin 270B Vol III

# PRODUCT INFORMATION

## UNIVAC 1532 INPUT/OUTPUT CONSOLE 0A-7984/UYK

PX 3699B

The UNIVAC 1532 Input/Output Console contains design improvements over the UNIVAC 1232 Console in environmental characteristics and versatility. Cabinet and packaging design used in the ruggedized Univac computer construction were utilized in the 1532 console. Either a 10-character-per-second Teletype model 35 KSR or a 20-character-per-second Kleinschmidt model 311\* Electronic Data Printer can be provided as an option with the paper tape read and punch capability. A mechanical linkage between the keyboard and page printer provides hard copy of all entries from the keyboard. Seven bit American Standard Code for Information Interchange (ASCII) is generated by the keyboard and recognized by the printer from computer or paper tape reader sources.

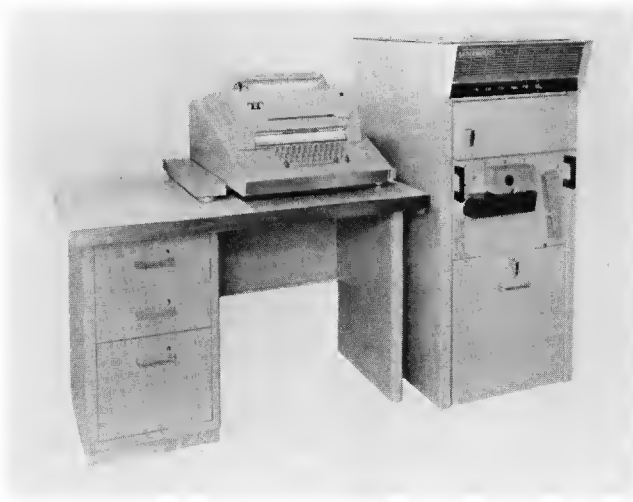
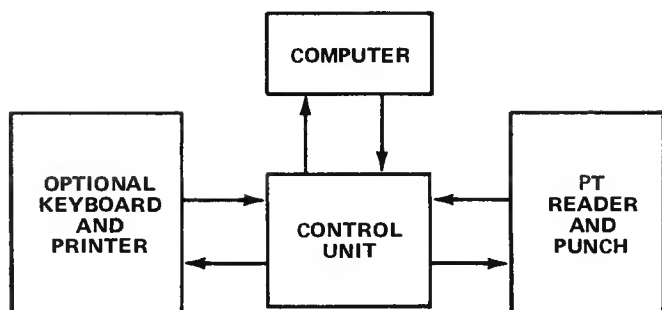


PHOTO #26169A



FUNCTIONAL DIAGRAM

### FUNCTIONAL CHARACTERISTICS

#### CODES

- Keyboard/printer
  - 7-bit ASCII
- Reader
  - Any 5, 6, 7 or 8 bit
- Punch
  - Any 6, 7 or 8 bit

#### PRINTING

- Speed
  - 10 characters per second; 20 characters per second optional\*
- Format
  - 10 characters per inch horizontally
  - 6 lines per inch vertically
  - 72 characters per line; 76 characters per line on option\*

#### PAPER

- Page Printer
  - Single-ply, white bond Teletype paper

#### TAPE

- Reader
  - 5, 6, 7 or 8 level oiled or dry paper or Mylar\*\*
  - 11/16", 7/8" or 1" widths
- Punch
  - 6, 7 or 8 level oiled or dry paper tape 7/8" or 1" widths; 10 frames per inch
- Speed
  - Read at 30 inches (300 characters) per second
  - Punch at 11 inches (110 characters) per second

#### CONTROL UNIT — COMPUTER INTERFACE

- Character parallel transmission
- Function command output
- Interrupt with keyed character code input
- Voltage level options: N3, P3.5 or N15

\*UNIVAC 1538 recommended

\*\*Trademark of E.I. duPont deNemours

## FUNCTIONAL CHARACTERISTICS (Continued)

### OFF-LINE OPERATIONS

Print on paper by keyboard entry  
Punch paper tape (7-bit ASCII) and print on paper by keyboard entry  
Print on paper from paper tape entry (7-bit ASCII)  
Punch paper tape from paper tape entry (any code)  
Punch paper tape and print on paper from paper tape entry (7-bit ASCII)

### ON-LINE OPERATIONS

Read paper tape input to the computer (any code)  
Punch paper tape (any code) from computer output  
Print on paper (7-bit ASCII) from computer output  
Keyboard input to the computer (7-bit ASCII) with print on paper  
Keyboard input to the computer with print on paper and (under program control) punch paper tape in any code  
Read paper tape input to the computer and (under program control) print on paper  
Read paper tape input to the computer and (under program control) punch paper tape (any code)  
Read paper tape input to the computer and (under program control) print on paper and punch paper tape (7-bit ASCII)  
Computer output to punch paper tape (7-bit ASCII) with print on paper

Combined operations are performed at speed of the slowest operating device

## PHYSICAL CHARACTERISTICS

The 1532 is packaged in a ruggedized cabinet, compatible in appearance with the UNIVAC 1218/1219 family. Air is taken in at the top front, kept at a positive pressure inside and exhausted at the lower rear of the cabinet. Controls and control unit logic printed circuit cards are assembled on a front access, pull-out drawer mounted at the upper part of the console cabinet. Similarly a Digitronics Reader model 2500 and a Teletype Punch BRPE-11 are mounted on a drawer directly below. The front, lower half of the cabinet is a bin for receiving perforated tape behind which is installed the power supply. The optional Teletype model 35 KSR keyboard-printer can be mounted on top of the main cabinet or on a desk attached to the left side.

SIZE (Inches)		POWER REQUIREMENTS	
Height with top mounted printer	64	Logic	
Height, basic unit cabinet	49	Volts	115 ± 10%
Width, basic unit cabinet	23	Frequency (Hz)	400 ± 5%
Depth	28	Phases	3
Desk		Watts	250
Height without printer	30	Motors	
Width	46	Volts	115 ± 10%
Depth	25	Frequency (Hz)	60 ± 5%
		Phases	1
		Watts	600
WEIGHT (Pounds)		COOLING	
Basic unit only	300	Forced air at	
With top mounted printer	405		
Basic unit with desk mounted printer	515		540 CFM

## PHYSICAL CHARACTERISTICS (Continued)

The following specifications and standards were used as design goals:

General Requirements	MIL-E-16400
Temperature	MIL-E-16400, Class 4 (0°C to 50°C)
Humidity	to 95% (Except for paper media)
Enclosure	MIL-STD-108
Salt Spray	FED-STD-151 (Method 811)
Shock	MIL-S-901, Class II (Without 30° inclination)
Vibration	MIL-STD-167 (Type I)
Inclination	MIL-E-16400
Mean Time Between Failures	200 Hours — Exclusive of electromechanical devices

### REFERENCES

Design Specification	DS 4754
Technical Manual	PX 3618
Outline and Dimension Drawing	7030351
Installation and Checkout Kit	LOG 7119
One Year Spares Kit	LOG 7504

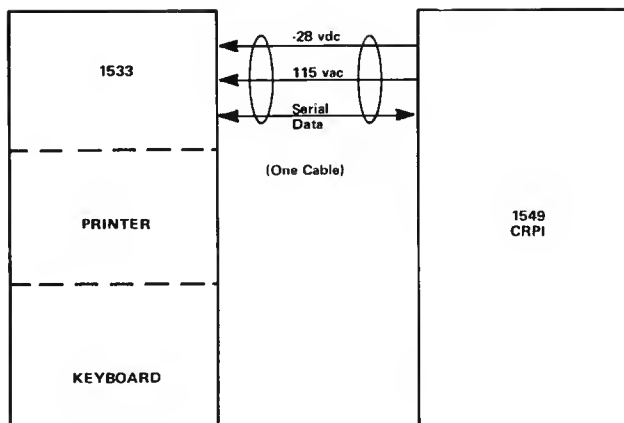
# PRODUCT INFORMATION

## UNIVAC 1533 KEYBOARD-PRINTER MARKETING DOCUMENT PX 4021A (TT-515/UYP)

The UNIVAC 1533 Keyboard-Printer is a Model 35 Teletype\* Keyboard Send Receive Set (KSR) modified to operate on a single input/output channel under computer program control via logic in the UNIVAC 1549 (see OP-2-1) or other compatible control logic. Entries to the computer may be made at the keyboard. An electrical linkage with the typing unit (page printer) is provided by a code (ASCII) return to the unit each time a character or function is initiated at the keyboard. This provides for a printout of keyboard input information. ASCII outputs from the computer (via 1549) are printed by the typing unit.



Negative No. 26791



FUNCTIONAL DIAGRAM

### FUNCTIONAL CHARACTERISTICS

Keyboard Input to Computer — ASCII  
 Output to Printer — ASCII  
 Serial Code Transmission  
 Signalling Code — 11 unit pattern  
 Mark Signal — Current  
 Space Signal — No current  
 Send Receive — 10 characters/second  
 Paper — Single or multicopy  
 Printing — 72 characters/line  
           — 10 characters/inch  
           — 6 lines/inch

### PHYSICAL CHARACTERISTICS

Height — 16.72 inches  
 Width — 22.28 inches  
 Depth — 26.12 inches  
 Weight — 115 pounds

### POWER REQUIREMENTS

115 VAC 60 Hz  
 — 28 VDC

### ENVIRONMENTAL CHARACTERISTICS

Operating Altitude — 10,000 feet  
 Operating Inclination — To 20° from vertical  
 Operating Temperature — 0° to 50°C  
 Storage Temperature — 62° to +75°C  
 Humidity — To 95%  
 Vibration — MIL-STD-167 Type I

### REFERENCES

Design Specification DS 4867  
 FACT Specification DS 4881 (1218)  
                               SB 10149 (CP-808)  
 Final Assembly Dwg. No. 7033650

\*Trademark of the Teletype Corporation

# PRODUCT INFORMATION

## UNIVAC 1538 INPUT/OUTPUT CONSOLE (0J-65/TYA-20)

The UNIVAC 1538 Input/Output Console is a version of the 1532 with logic modified to interface with a 40 character per second Kleinschmidt Electronic Data Printer model 311. The keyboard generates 5-bit Teletype\* codes and has an electrical linkage to the printer which responds to teletype codes when the print function is activated.



### FUNCTIONAL CHARACTERISTICS

#### CODES

- Keyboard/printer
  - 5-bit Teletype
- Reader
  - Any 5, 6, 7 or 8 bit
- Punch
  - Any 5, 6, 7 or 8 bit

#### PRINTING

- Speed
  - 40 characters per second
- Format
  - 10 characters per inch horizontally
  - 6 lines per inch vertically
  - 76 characters per line

#### PAPER

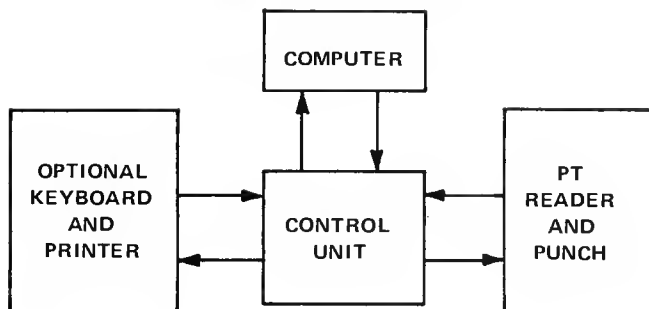
- Page Printer
  - Single-ply, white bond Teletype paper

#### TAPE

- Reader
  - 5, 6, 7 or 8 level oiled or dry paper or Mylar\*\*
  - 11/16", 7/8" or 1" widths, chad type
- Punch
  - 5, 6 or 7 level on 7/8" width tape or
  - 5, 6, 7 or 8 level on 1" width tape
  - Oiled or dry paper or Mylar
  - 10 frames per inch
- Speed
  - Read at 30 inches (300 characters) per second
  - Punch at 11 inches (110 characters) per second

#### CONTROL UNIT – COMPUTER INTERFACE

- Character parallel transmission
- Function command output
- Interrupt with keyed character code input
- Voltage level: N3



FUNCTIONAL DIAGRAM

\*Trademark of Teletype Corporation

\*\*Trademark of E.I. duPont deNemours

6.70

## FUNCTIONAL CHARACTERISTICS (Continued)

'1538)

### OFF-LINE OPERATIONS

- Print on paper by keyboard entry
- Punch paper tape (5-bit Teletype Codes) and print on paper by keyboard entry
- Print on paper from paper tape entry (5-bit Teletype Codes)
- Punch paper tape from paper tape entry (any code)
- Punch paper tape and print on paper from paper tape entry (5-bit Teletype Codes)
- Read paper tape input to the computer (any code)
- Punch paper tape (any code) from computer output
- Print on paper (5-bit Teletype Codes) from computer output
- Keyboard input to the computer (5-bit Teletype Codes) with print on paper
- Keyboard input to the computer with print on paper and (under program control) punch paper tape in any code
- Read paper tape input to the computer and (under program control) print on paper
- Read paper tape input to the computer and (under program control) punch paper tape (any code)
- Read paper tape input to the computer and (under program control) print on paper and punch paper tape (5-bit Teletype Codes)
- Computer output to punch paper tape (5-bit Teletype Codes) with print on paper

Combined operations are performed at speed of the slowest operating device

### PHYSICAL CHARACTERISTICS

The 1538 is packaged in a ruggedized cabinet, compatible in appearance with the UNIVAC CP-808. Air is taken in at the top front, kept at a positive pressure inside and exhausted at the lower rear of the cabinet. Controls and control unit logic printed circuit cards are assembled on a front access, pull-out drawer mounted at the upper part of the console cabinet. Similarly a Digitronics Reader model 2500 and a Teletype Punch BRPE-11 are mounted on a drawer directly below. The front, lower half of the cabinet is a bin for receiving perforated tape behind which is installed the power supply. The keyboard-printer is mounted on top of the main cabinet.

<b>SIZE (Inches)</b>		<b>Motors</b>	
Height with top mounted printer	59	Volts	115 ± 10%
Width, basic unit cabinet	23	Frequency (Hz)	60 ± 5%
Depth	38	Phases	1
		Watts	600
<b>WEIGHT (Pounds)</b>	440	The 60 Hz motor power is taken from a 400 Hz frequency converter.	
<b>POWER REQUIREMENTS</b>		<b>COOLING</b>	
Logic		Forced air at	540 CFM
Volts	208 ± 10%	Operating Temperature Console	
Frequency (Hz)	400 ± 5%	Console	0° to 50°C
Phases	3	Keyboard Printer	+10° to 50°C
Watts	250	Non-Operating (Storage) Temperature	-72° to +75°C

The following specifications and standards were used as design goals:

General Requirements	MIL-E-16400
Temperature	MIL-E-16400, Class 4 (0°C to 50°C)
Humidity	to 95% (Except for paper media)
Enclosure	MIL-STD-108
Salt Spray	FED-STD-151 (Method 811)
Shock	MIL-S-901, Class II (Without 30° Inclination)
Vibration	MIL-STD-167 (Type I)
Inclination	MIL-E-16400
Mean-Time-Between-Failure	200 Hours — Exclusive of electromechanical devices

**PHYSICAL CHARACTERISTICS (Continued)**

**(1538)**

**REFERENCES**

Design Specification	SB-10067
Outline and Dimension Drawing	7050901
One Year Spares Kit	Log 7558

**MANUALS**

**TITLE**

PX 5005-0-2	1538 I/O CONSOLE TECHNICAL MANUAL
PX 3871-0-1	DIGITRONICS PERFORATED TAPE READER, MODEL 2500
PX 3865-0-1	TELETYPE HIGH-SPEED TAPE PUNCH
PX 3866-0-1	TELETYPE, PARTS, HIGH-SPEED TAPE PUNCH
PX 4424-0-1	TELETYPE MOTOR UNITS

**Available Configuration:**

Final Assembly No. 7050900-00; USMC Controlled Drawing  
Status: ACTIVE (Special Project Design) A(S)



# PRODUCT INFORMATION

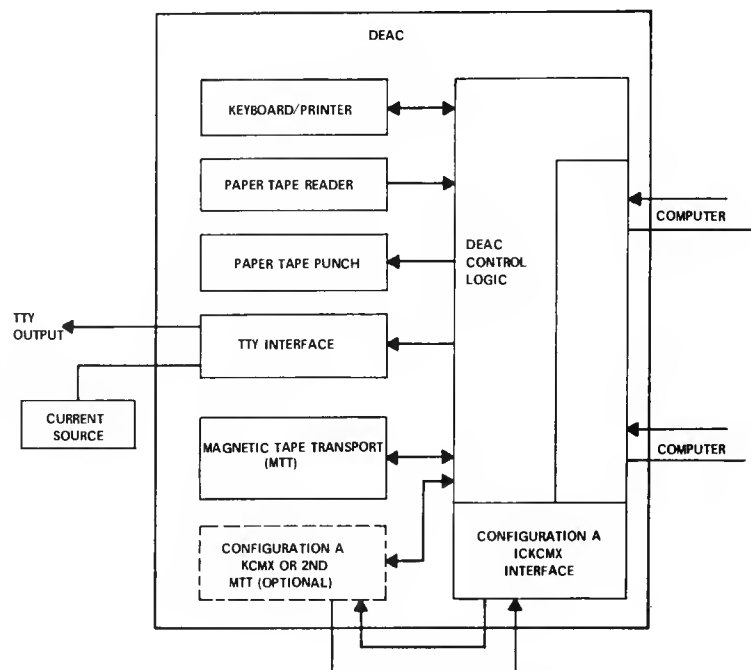
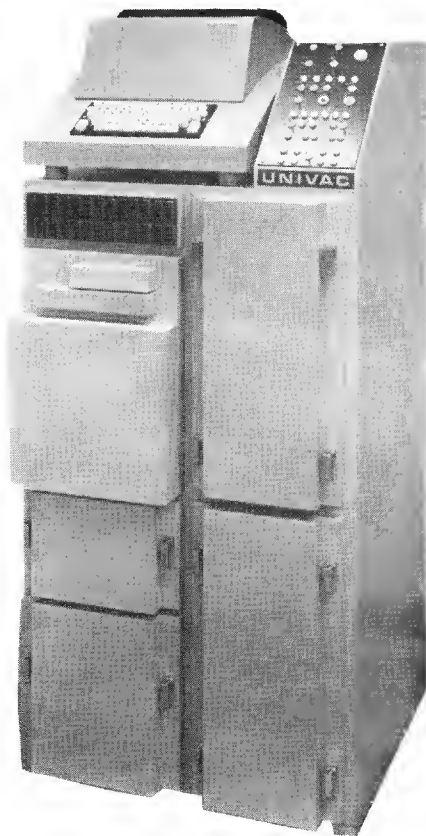
## UNIVAC 4012 DATA EXCHANGE AUXILIARY CONSOLE (DEAC)

PX5304

The UNIVAC 4012 Data Exchange Auxiliary Console (DEAC) is a multipurpose input/output unit that incorporates several low to medium speed devices in a single ruggedized cabinet. It contains a two computer duplexing controller that furnishes interface logic and timing for the following independent modules:

Paper Tape Punch  
Paper Tape Reader  
Magnetic Tape recorder/reproducer

Keyboard and page printer  
Teletype output line  
Configuration A Keyset Central Multiplexer



FUNCTIONAL DIAGRAM

## FUNCTIONAL CHARACTERISTICS

### OFF-LINE OPERATIONS (MANUALLY CONTROLLED)

1. Keyboard entries printed on paper.
2. Keyboard entries printed on paper and punched on paper tape in ASCII.
3. Contents of ASCII coded perforated tape printed on paper.
4. Duplicate ASCII coded perforated tape with data printed on paper.
5. Duplicate (any 5, 6, 7, or 8 level code) perforated tape.

# ON-LINE OPERATIONS (COMPUTER CONTROLLED)

DEAC, with a full complement of I/O modules, provides the following operations on-line with a computer.

On-line Optional I/O Operations	Inputs to Computer from				Outputs from Computer to				
	Paper Tape Reader (Any 5-8 level code)	Keyboard (ASCII) with printed copy	Magnetic Tape Reader *	ICKCMX *	Paper Tape Punch (Any 5-8 level code)	Page Printer (ASCII)	TTY Communication *	Magnetic Tape Write *	ICKCMX *
1	x								
2					x				
3						x			
4		x							
5	✓	✓	✓	✓			x		
6	x					x			
7	x				x				
8					x	x			
9								x	
10			x						
11		x						x	
12	x							x	
13			x		x				
14			x			x			
15				x					
16									x
17	✓	✓	✓	x	✓	✓	✓	✓	x
18									x

x Single or simultaneous operations

✓ Choice of one operation with x for simultaneous input and output

\* Operable on-line while remaining units are off-line

## PAPER TAPE READER

Tape: Paper or Nylon  
 Width: 11/16", 7/8", or 1"  
 Thickness: 0.0025 to 0.005 inch  
 Frame: 5, 6, 7, or 8 Level Code  
 Speed: 400 Frames per second  
 Manual Controls: Power On/Off  
 Tape Load  
 Tape Width Adjust

## PAPER TAPE PUNCH

Tape: Paper  
 Width: 7/8" or 1"  
 Thickness: 0.0025 to 0.005 inch  
 Frame: 5, 6, 7, or 8 Level Code  
 Speed: 110 Frames per second  
 Punch Density: 10 Frames per Inch  
 Manual Controls: Power On/Off

## FUNCTIONAL CHARACTERISTICS (CONTINUED)

### KEYBOARD-PRINTER

Line Width: 72 Characters  
 Character Spacing: 10 per Inch  
 Line Spacing: 6 per Inch Single-Space  
                   3 per Inch Double-Space  
 Tape Font: Open Gothic  
 Paper Width: 8-1/2"  
 Paper Feed: Friction, 5" dia Roll  
 Keyboard: 4-Row ASCII  
 Print Code: ASCII  
 Signal Transmission: 11-Unit Start-Stop  
 Signal Rate: 100 WPM (10 Characters per Second)

### TELETYPE OUTPUT

Transmission rate: 100 words per minute  
 Voltage source: External, 50 to 100 VDC  
 Output Circuits: 20 ma or 60 ma  
 Transmission type: Neutral, 7.00 Unit  
                           Start-Stop cycle  
                   Logical "one" current  
                   Logical "zero" no current

### MAGNETIC TAPE TRANSPORT

Tape Drive: Single Capstan Friction  
 Tape Speed:  
           Read/Write: 75 ips Fwd/Rev  
           Rewind: 150 ips Maximum  
 No. of Tracks: 7  
 Recording Method: NRZI  
 Inter-Block Gap: 0.75 Inch  
 Tape Buffer: Vacuum Chamber  
 Reel Size and Wind: 10-1/2 inch, A-Wind, RD-294  
                           Compatible  
 Tape Sensors: Load Point, End-of-Tape  
                           Reflective  
 Head Arrangement: Dual Gap Read/Write, Full  
                           Width DC Erase  
 Recording Densities: 200/556/800  
 Read Function: Forward and Backward  
 Write Function: Forward  
 Write File Protect: Write Enable Ring in Master  
 Tape Width: 1/2 Inch  
 Tape Length: 2400 Feet (1.5 mil)

## PHYSICAL CHARACTERISTICS

### CONSTRUCTION

All functional modules are removable from the heavy gauge welded aluminum cabinet that can be disassembled in sections small enough to pass through a 25-inch diameter opening or a 20 x 30 inch doorway. On top of the ruggedized cabinet are located the keyboard/printer and the control panel. The power supply and control logic occupy the lower left section and the paper tape reader and punch occupy the upper left position. Two right drawer positions are used for two magnetic tape transports or one magnetic tape transport and one configuration A integrated circuit Keyset Central Multiplexer.

MODULE	SIZE INCHES	WEIGHT POUNDS	POWER (NOMINAL)	
			WATTS	TYPE
PAPER TAPE PUNCH TELETYPE BRPE-11	12H x 8W x 17D	25.0	220	115V, 60HZ, 1 $\phi$
PAPER TAPE READER DIGITRONICS MODEL 2540	5.3H x 10W x 10.8D	7.5	180	115V, 60HZ, 1 $\phi$
KEYBOARD PRINTER TELETYPE MODEL 35	14H x 20W x 25D	100.0	225	115V, 60HZ, 1 $\phi$
MAGNETIC TAPE TRANSPORT UNIVAC 1840 MODULE	24.5H x 19W x 9.5D	125.0	600	115V, 400HZ, 3 $\phi$
ICKCMX UNIVAC CONFIGURATION A	22.5H x 22.5W x 11.25D	120.0		Taken from controller power
DEAC CABINET AND LOGIC (INCLUDING K/P)	48.25 H x 29W x 28.5D 65H	700.0	1700 470	115V, 400HZ, 3 $\phi$ 115V, 60HZ, 1 $\phi$

## PHYSICAL CHARACTERISTICS (CONTINUED)

### COOLING

Ambient air circulation at 300 cfm

### INTERFACE

Word length (by switch selection):	18 or 30/32 bits
Signal voltage:	-3 volts or -15 volts
Computer — DEAC channels:	2 parallel input and output or 2 serial input and output or 1 serial input and output and 1 parallel input and output

## ENVIRONMENTAL CHARACTERISTICS

Except for inherent limitations of typewriter, paper tape, paper tape reader and punch mechanism and magnetic tape used, the following specifications were used as design goals:

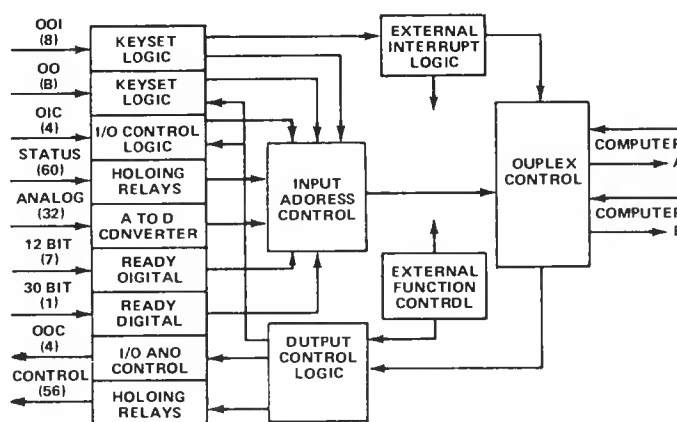
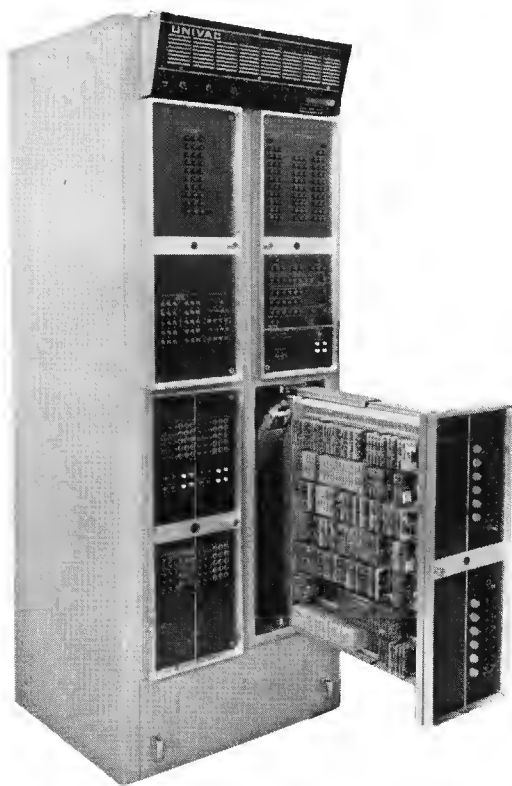
Temperature:	MIL-E-16400 Class 4
Relative Humidity:	MIL-E-16400
Enclosure	
(Drip-Proof):	MIL-STD-108
Salt Spray:	FED-STD-151 Method 811
RFI :	MIL-I-16910
Shock:	MIL-S-901 Grade A Class II
Vibration:	MIL-STD-167 Type I
Inclination:	MIL-E-16400

REFERENCES: Design Specification SB10301  
Design Specification SB10194

# PRODUCT INFORMATION

## UNIVAC KEYSET CENTRAL MULTIPLEXER (KCMX) (CV-2036/USQ-20(V))

The KCMX is an intermediate input/output multiplexer and conversion device that operates under a two computer control as an unattended unit. It converts and multiplexes input signals to digital data for the computer and converts and multiplexes computer digital output data to appropriate signals for output devices.



FUNCTIONAL DIAGRAM

### FUNCTIONAL CHARACTERISTICS

#### KCMX → COMPUTER INTERFACE

Duplexed Computer Control    2 Computer (Duplexed) Control  
30 Bit, N15 Interface  
External Functions, Interrupts, Data

**KCMX → EXTERNAL DEVICES INPUT AND OUTPUT (MULTIPLEXED)**

<b>SIGNAL IDENTIFICATION</b>	<b>MAXIMUM CAPABILITY</b>	<b>FORMAT</b>	<b>KCMX PROCESSING</b>	<b>INPUT KCMX ADDRESS ASSIGNMENT (OCTAL)</b>
Demand Digital (with or without interrupt)	8 inputs	30-bit digital keyset input	None	1 through 10
Demand Digital (DD)	8 inputs	30-bit digital keyset input	None	11 through 20
Ready Analog	32 inputs (8-60 or 400 Hz) (24-400 Hz only)	Synchro analog inputs (dual or single speed)	A to D	21 through 60
Status Signals	60 inputs	Contact closures, input	Encoding to 2 30-bit words	61 and 62
12-Bit Ready Digital	7 inputs	12-bit digital radar azimuth input	None	63 through 71
30-Bit Ready Digital	1 input	30-bit digital radar azimuth input	None	72
Digital Input Data Channel (DIC)	4 inputs	30-bit digital input	None*	73 through 76
Digital Output Data Channel (DOC)	4 outputs	30-bit digital output	None*	Output
Control Signals	56 outputs	Contact closures, output	Digital to relay	Output

\*Five options of Count-Down-Time-Delay for holding up the KCMX multiplexing functions

## PHYSICAL CHARACTERISTICS

Four pullout drawers containing wire wrapped chassis assemblies of logic cards and discrete components are mounted in a ruggedized cabinet. Required indicators, controls and switches are located on the front panel of each drawer and on the control panel above the four drawers.

### CABINET SIZE

72"H x 26"W x 39"D

### WEIGHT

Approximately 1055 pounds

### COOLING

Forced, water cooled air; 4 gpm at 70°F maximum

### POWER REQUIREMENTS

Logic: 115 volts  $\pm 10\%$ , 400 Hz  $\pm 5\%$ , 3 phase, 1085 watts

Blowers: 115 volts  $\pm 10\%$ , 400 Hz  $\pm 5\%$ , 3 phase, 186 watts

### ENVIRONMENT

Operating Temperature 0° to 50°C

Nonoperating Temperature -62° to +75°C

Relative Humidity to 95%

### SPECIFICATIONS AND STANDARDS USED AS DESIGN GOALS

General MIL-E-16400

Enclosure MIL-STD-108

Salt Spray FED-STD-151 (Method 811)

Shock MIL-S-901 (except inclination)

Vibration MIL-STD-167 (Type I)

### MTBF

1200 Hours

### REFERENCES

Design Specification DS 4852

Acceptance Specification DS 4859

Outline and Dimension Drawing 7033298

Part Number 7033011-00

Installation Checkout Kit Log 7609

One Year Spares Kit Log 7615

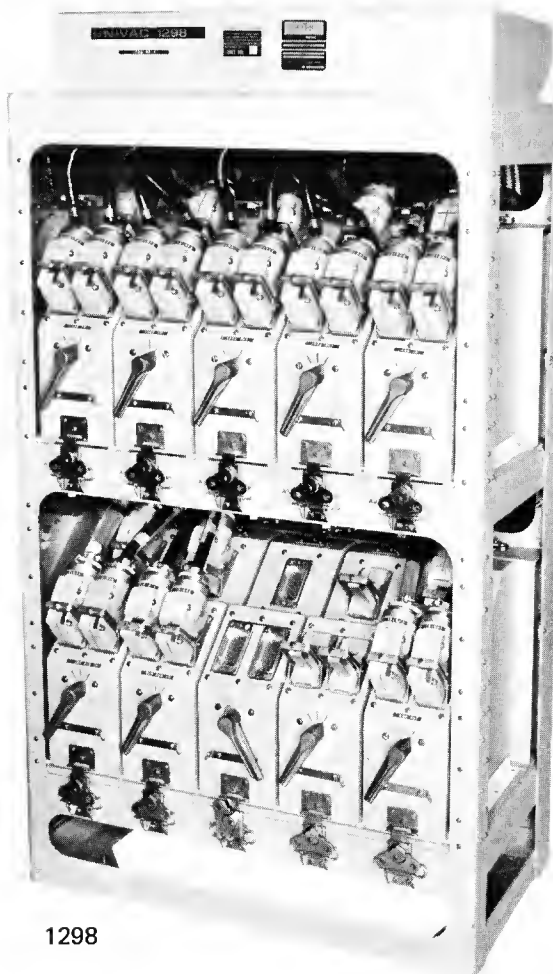
Ordering Data See paragraphs 3.3.4, 3.3.6.2, and 3.3.6.5 of DS 4852

# PRODUCT INFORMATION

## UNIVAC 1298, 1299, 1299B, 1299C INTERCONNECTING PANEL (SB-1299)

The UNIVAC Digital Data Signal Distribution Switchboard (interconnecting panel) is an assembly of rotary switches used for reconfiguring computer/peripheral hardware in a system. The 68- and the 80-pole switches have three positions: center position disconnects the interface; positions one and three are used to connect one computer channel to two peripheral devices, one peripheral device to one of two computer channels, or cascaded with others in the assembly to accomplish more complex configurations. The 96-pole rotary switch assembly (1299C) has six positions; five of which are wired to 90-pin connectors for peripheral or computer interface and one OFF position is unwired. A seventh connector is provided for indicating the switch handle position to a controlling computer. With the 96-pole switch assembly a peripheral device can be connected to one of five computers; or a computer to one of five peripheral devices. Up to ten multipole switch modules may be contained in the main frame or cabinet.

The 1298 assembly has a cable adapter unit on top of the rack frame. This adapter, contains proper switch output jack interconnections that allow two peripheral devices to be interchanged on 2 computer input and output channels through four switch units (2 for input and two for output); 68 pole or 80 pole and special teletypewriter circuit switches can be used in the 1298 (up to 10 total). The special TTY switch module provides a signal and control line switching capability between two 1262 adapters and two 1450 auxiliary line relays and for closed loop testing for two teletypewriter systems.



1298

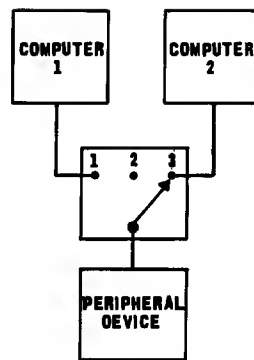
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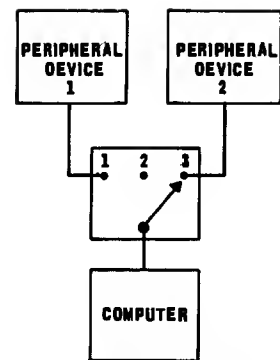
1299

Photo No. 21235

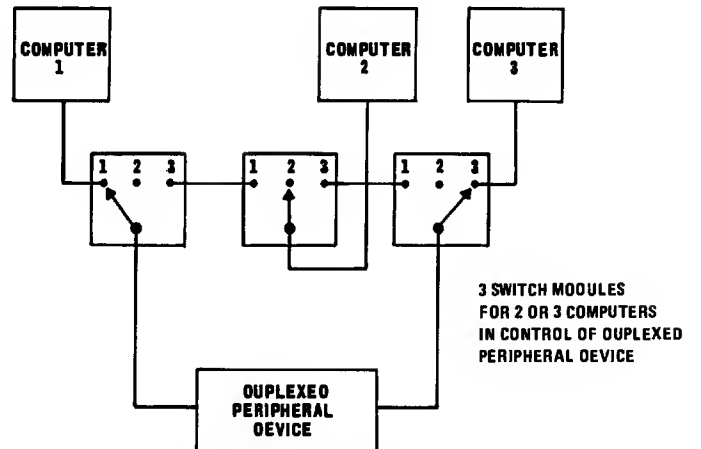




**CONFIGURATION 1**

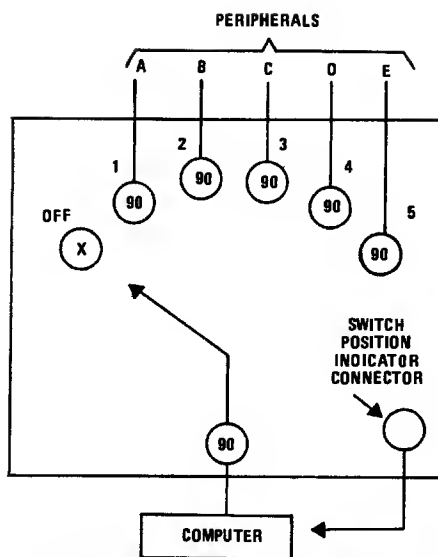


**CONFIGURATION 2**

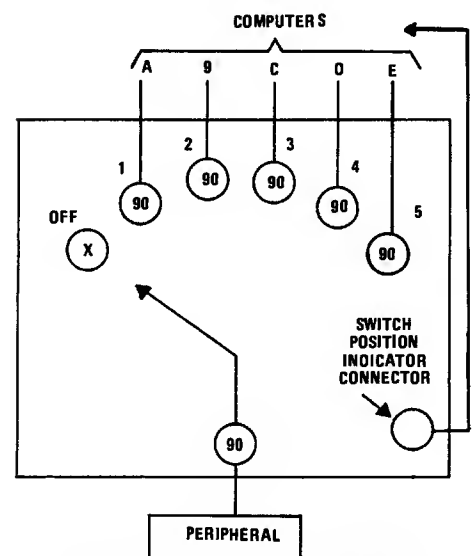


**CONFIGURATION 3**

3 SWITCH MODULES  
FOR 2 OR 3 COMPUTERS  
IN CONTROL OF DUPEXED  
PERIPHERAL DEVICE



**1299C 96 POLE 6 POSITION SWITCH**



**1299C 96 POLE 6 POSITION SWITCH**

## FUNCTIONAL CHARACTERISTICS

### Equipment Configuration Switching

Two switch modules for each channel (one for output, one for input)

Type	No. of Poles	Maximum Interface (Bits)	Switch Handle Positions		Position Indicator
			On	Off	
1299	68	30	1 & 3	2	Handle
1299B	80	36	1 & 3	2	Handle
1299C	96	44	1,2,3,4, & 5	Off	Handle and Binary Coded Circuit

## PHYSICAL CHARACTERISTICS

Switch modules are mounted in a sturdy equipment rack by quick disconnect locks. The unit can be ordered with or without a sway brace (stabilizer). The 1299C switches (SA-1722/UYK) which are longer than the 68 and 80 pole switches extend farther in front of the rack. Interconnecting cables plug directly into the connector on each switch module.

Type	Dimensions (Inches)			Max Weight (Pounds)
	Height	Depth	Width	
1298	56	19	31	300
1299, 1299B	52	17	31	300
1299C	52	23	31	300

Environmental MIL-E-16400

Operating Temp. 0 to 50°C

Non-Operating Temp. -29 to +50°C

### References:

SB 1299 and SB 1299B Technical Manual: PX 3123-0-2

SA-1722/UYK (1299C) Rotary Switch Technical Manual: NAVSHIPS

### Design Specifications:

SB 1299 and SB 1299B DS 4558

1298 DS 4614

1299 DS 4608, DS 4558

SA-1772/UYK Switch SB 10427

Acceptance Specification SB 10039, SB 10108

# PRODUCT INFORMATION

## UNIVAC 1549 CARD READER-PUNCH INTERPRETER RD293( )/UYK-5V

The UNIVAC 1549 Card Reader-Punch Interpreter (CRPI) in its original design provides card reading, punching, and interpreting (printing) for the UNIVAC 1500. Although an I/O device, the 1549 unit is the primary means of entering data for storage and for retrieving data from storage.

The 1549 has two major units: a common control unit and a punched card unit. The control unit contains the computer interface and control logic for the 1533 keyboard-printer, 1569 high-speed printer, and the reader-punch-interpreter. Later 1549 versions do not include the interpreter. A 256-word, 12-bit core memory provides the buffer requirements for the card equipment and the high-speed printer. The card unit provides the card reading assembly, the card punching assembly, the printing assembly, associated drive circuitry, card feed and output hoppers. All functional operations, maintenance, and repair can be performed with front access.



### FUNCTIONAL CHARACTERISTICS

Card Punching Speed — 200 cards per minute, nominal

Card Reading Speed — 330 cards per minute, nominal

Card Printing Speed — 32 cards per minute minimum (faster when fewer characters are printed)

Input Hopper Capacity — 500 cards minimum

Output Stacker Capacity — 500 cards minimum

Number of Stackers — 2

Card Size — 3.250 inch x 7.375 inch — 80 column per RS-292

Hole Size and Shape — EIA Standard Rectangular per RS-292

Reading Method — Photoelectric

Punching — Paper or plastic cards

Card Printer Code — XS3, others optional at extra cost

Card Printer Type Font Size — 0.090 inch high x 0.062 inch wide; 60 characters per line on each of two lines

Card Punching Verification — Post punch read

Card Printing Method — Print hammer strikes against drum containing 63 printable symbols and characters

### BUFFER MEMORY

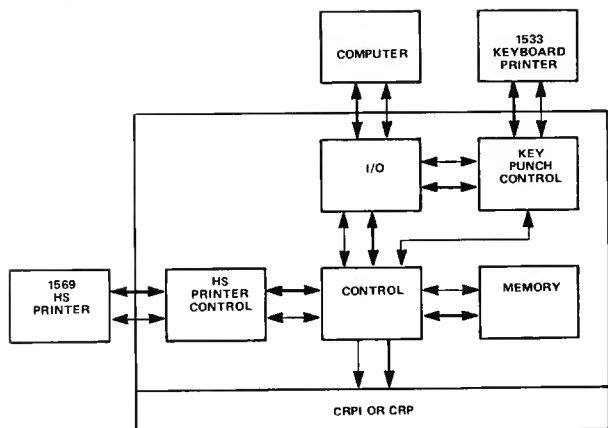
Type — Magnetic core, DRO random access

Read-Write Cycle Time — 4 microseconds

Word Length — 12 bits

Size: 256 decimal words provide storage for:

Code conversion  
120 character line table  
132 character line table  
80 column card data storage  
CRPI Index Addresses  
HSP Index Addresses



FUNCTIONAL BLOCK DIAGRAM

## CONSTRUCTION

The 1549 is designed for military applications with logic and cabinet ruggedized for military applications. A card handling unit, a power supply, a hood assembly and three logic chassis are housed in the three compartment cabinet. Logic chassis are hinged and can swing out to allow front access for maintenance. The card handling unit is mounted on a 22 x 56 inch recessed panel in the upper third of the cabinet and can be withdrawn on its mounting slides for easy maintenance. Access to the power supply that is located behind the logic chassis is provided through the left hand door or from the rear by removing the back panel. The hood assembly contains operating controls and air intake grille on the front and interconnecting cable connectors on the rear top. Air filters and blowers are inside the hood.

## PHYSICAL CHARACTERISTICS

Size (inches) 66H x 62W x 28D

Weight (pounds) — 1000

Cooling — Ambient Air; internal blowers

Heat Dissipation — 4400 Watts/Hr at 75°F

Primary Power — 400-cycle power —  $115V \pm 5\%$   
3-phase 400 cycle  $\pm 10\%$ ,  
1800 watts maximum

60-cycle power —  $115V \pm 10\%$   
single phase, 60 cycle  $\pm 5\%$ ,  
2600 watts maximum

## ENVIRONMENTAL CHARACTERISTICS

The following specifications were used as guides for design and construction:

General Specification MIL-E-16400E

Temperature 0–50°C

Relative Humidity (up to 95% operating)

Shock MIL-S-901C

External Radiation MIL-I-16910A

Enclosure MIL-STD-108D

Vibration MIL-STD-167

## REFERENCES

1549 (7033500-00) Moonbeam

PX 3750-1-1, Vol. 1 Technical Manual

PX 3750-2-1, Vol. 2 Technical Manual

PX 3752-0-1 Maintenance Test Manual

1549 Modified (7033500-01) FBM

Same technical manual as above plus

FBM Supplement PX 4087-0-1

PX 4089-0-1 (Applies to tests for CRPI which controls a  
132-column printer)

1549A (7047325-00) TSS

PX 4634-1-1 Vol. 1 Technical Manual

PX 4634-2-1 Vol. 2 Technical Manual

1549B (7047326-00) 18-bit Omnibus

Same technical manual as for 1549A plus supplement PX  
4681-0-1

1549C (7047327-00-01) 30-bit Omnibus

PX 4707-1-1 Technical Manual

PX 4707-1-1 Technical Manual

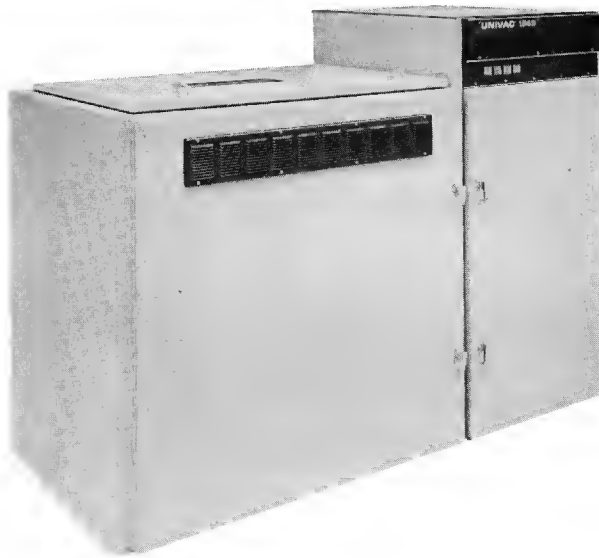
PX 5007-1-1 1549 CRPI, Vol. 1

PX 5007-2-1 1549 CRPI, Vol. 2

# PRODUCT INFORMATION

## UNIVAC 1569 HIGH-SPEED PRINTER RO-302( )/UYK-5(V)

The UNIVAC 1569 was originally designed to supply high-speed printing capability in the UNIVAC 1500 Management Information System (MIS). The 1569 HSP accepts digital data in XS-3 code from the buffer memory and controls in the UNIVAC 1549 (see OP-2-1) and prints the information on single or multicopy paper. Printing data and control information are furnished to the appropriate 1549 version by a computer or by a magnetic tape unit in an off-line environment. Printing options of 120 or 132 characters per line are available.



Negative No. 28308

### FUNCTIONAL CHARACTERISTICS

Printing Speed — 600 lines per minute maximum  
450 lines per minute average

Format — 120 or 132 characters per line (option)  
10 characters per inch horizontal  
6 lines per inch vertically  
Printed characters: 63 plus space

Paper Types: Up to 6 parts, 12 pound bond  
Single copy 15 pound bond (min. wt.)

Paper Form Length — 22 inches maximum

Paper Width — 17-25/32 inches to approximately 5 inches

Print Type Font — Open Gothic characters

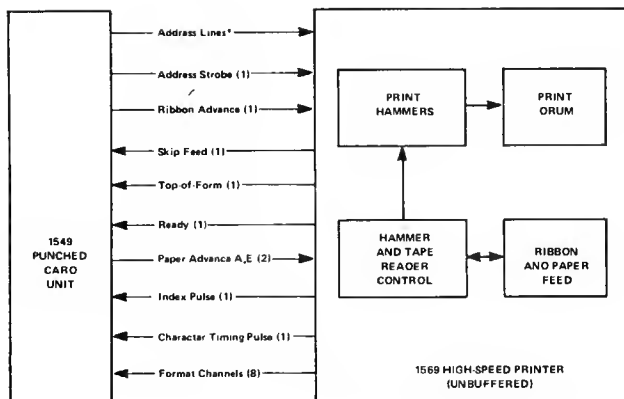
Printing Method — Print hammer impact against rotating drum  
containing 64 characters in each character position of a line

Paper Slew Rate — 8 inches per second

Vertical Format Control — Punch tape loop

Paper Feed — Pin feed type tractors (four)

Printer Code — XS-3



\*7 Address lines for 120 ch/line printer  
8 Address lines for 132 ch/line printer

HSP-1549 FUNCTIONAL DIAGRAM

## CONSTRUCTION

The 1569 Cabinet consists of two major sections: 1) a mechanical section that contains a Data Products High-Speed Line Printer Mechanism Model 421 and space for paper supply 2) an electrical section that consists of the Data Products HSP Electronics Model 422 for driving and controlling the printing mechanism. The 2 compartment ruggedized cabinet has two front doors that allow servicing and maintenance access and one top cover door over the printer compartment. Cooling blowers are contained in both compartments. Operating controls are located in the hood assembly of the electronics compartment just below the air intake grille.

## PHYSICAL CHARACTERISTICS

Size (inches) — 45H x 65W x 28D

Weight — 750 pounds

Cooling Air — Ambient (410 CFM)

Primary Power — 60 cycle, 115V,  $\pm 10\%$  single phase, 900 watts

## ENVIRONMENTAL CHARACTERISTICS

The following specifications were used as design guides:

General Specification	MIL-E-16400
Temperature	50° to 90°F
Relative Humidity	20 to 85%
Shock (while not operating)	MIL-S-901C(1)
External Radiation	MIL-I-16910C(1)
Enclosure	MIL-STD-108E
Vibration	MIL-STD-167

## REFERENCES

Design Specifications — DS-4866, SB-10126, SB-10193

Acceptance Specifications — DS-4871 (1218), SB-10047 (1218), SB-10123 (CP-808)

## MANUALS

PX 5008-0-2      1569 High-Speed Printer

Data Products Manual for 1569

PX 3748-0-1      Technical Manual (7036900-00)

PX 4085-0-2      Technical Manual (7036900-01) supplement

PX 4665-0-1      Technical Manual (7036900-02) supplement

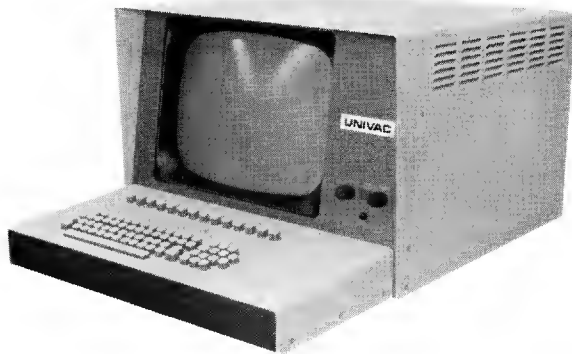
# PRODUCT INFORMATION

PX 4251A

## UNIVAC 1551 ALPHANUMERIC DISPLAY

The UNIVAC® 1551 alphanumeric display unit consists of a desk-top cabinet containing a 17-inch cathode ray tube (CRT) for displaying 25 lines of 80 characters each in text-type format, a keyboard for data control and function selection, a power supply, ferrite core memory, and the necessary logic, character generating, and control electronics. The unit is completely modular, thereby allowing the sections to be readily interchangeable with similar units.

Storage is provided in a ferrite core memory, which may be loaded by a computer output channel or by keyboard entry. After the memory is loaded, the alphanumeric symbols will be displayed continuously at the selected positions on the CRT. Characters are regenerated on the screen at a minimum of 50 times per second. The communication path between memory and the computer or the keyboard need be resumed only when the display is to be changed. Cycle time of the memory is approximately four microseconds.



## FUNCTIONAL CHARACTERISTICS

### Cathode Ray Tube

- 17-inch rectangular tube
- 9-inches by 12-inches active display area
- Electromagnetic deflection
- 25 lines of 80 characters per line
- 0-50 foot-lambert brightness at 50 cps refresh rate
- P-31 Phosphor

### Alphanumerics

- 63 characters: 26 alphabetic, 10 numerals, 27 symbols
- Character height 0.15 inch, vertical spacing 0.36 inch

### Data Entry

- Full range alphanumeric keyboard (modified ASCII)
- 14 key function keyboard
- Display clear, line erase, message erase
- Cursor Control Keys:

Forward Space — 1 space right

Back Space — 1 space left

Carriage Return — Move to left-hand margin and advance 1 line

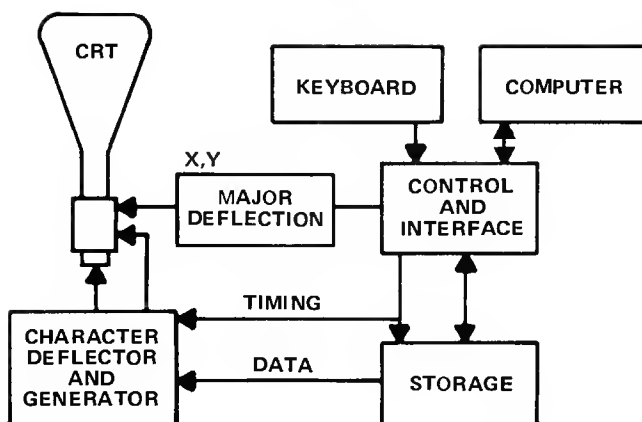
← (Back space) — Move left continuously until released

→ (Forward space) — Move right continuously until released

↓ (Downward space) — Move downward continuously until released

↑ (Upward space) — Move upward continuously until released

Cursor Reset — Move to column 1 of line 2



FUNCTIONAL DIAGRAM

### Refresh Memory

- 2048 eight-bit words with 4-microsecond cycle time

# PHYSICAL CHARACTERISTICS

## CONSTRUCTION

The unit is packaged in a ruggedized cabinet with removable skin sections for access during maintenance. The keyboard has three distinct areas of operator control (viz., Data Keyboard, Control Keys, and Function Keys). It is mounted in front of the CRT viewing area.

Built for military application — field operations, transportable systems and ships, aircraft and aerospace applications — requiring ruggedized construction, the display unit was designed with the following military specifications as design goals:

- General Requirements: MIL-E-16400E
- Shock: MIL-S-901B
- Vibration: MIL-STD-167
- Inclination: MIL-E-16400
- Salt Spray: Fed STD No. 151 (Meth. 611)
- Temperature: MIL-E-16400 (0 to 50°C)
- Humidity: MIL-E-16400 (10 to 95 percent)
- Interference: Conducted Radiation per MIL-I-16910C
- Enclosure: Dripproof per MIL-STD-108D (Keyboard excepted)

### DIMENSIONS:

16"H x 24"W x 34"D with keyboard

### WEIGHT:

125 pounds

### POWER REQUIREMENTS:

115 volts  $\pm 10\%$ , 400 Hz  $\pm 5\%$ , 3 phase, 300 to 350 watts

### COOLING:

Forced ambient air

### OPTIONS:

Detached keyboard to 6 feet of cable  
No keyboard  
-3 volt or -15 volt interface  
60 Hz primary power

DS 4833  
PX 4537-1-X

Design Specification  
Technical Manual



# PRODUCT INFORMATION

## MOTOR GENERATOR SETS

A variety of Motor Generator Sets is available from Univac to provide system users a regulated 400 hertz three phase power source and line isolation to meet the requirements of Univac computers and associated peripheral equipment. Both heavy duty militarized types and heavy duty commercial grade are offered for these requirements. Type numbers in some cases are assigned to 1) complete Motor Generator Sets, 2) Motor Generator Units, and 3) Motor Generator Control Units.

MG SET 8503

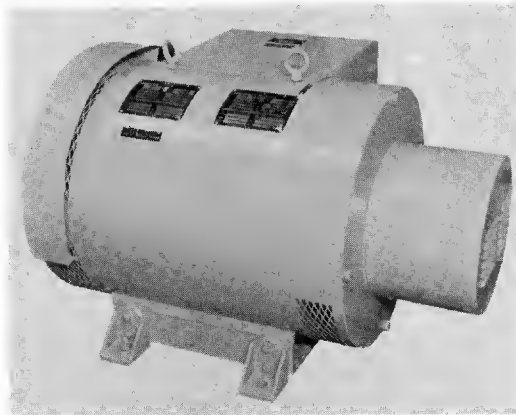


PHOTO NO. 26605

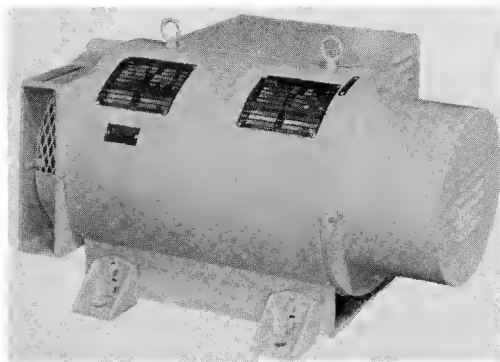


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MG SET 1547

MG SET

1392

1394

1395

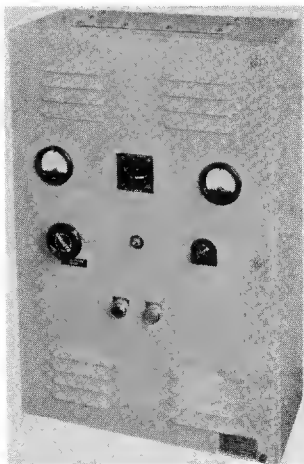


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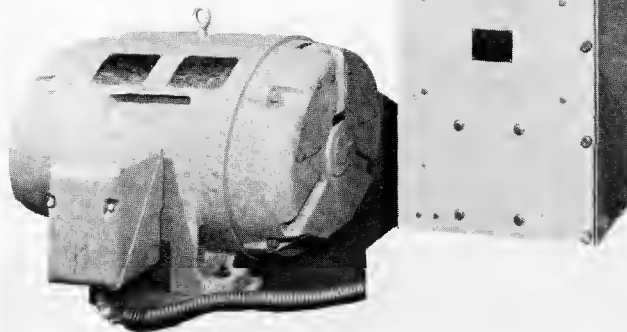


PHOTO NO. 20307-17A

MOTOR GENERATOR (MG) SETS (ALLIS CHALMERS)  
 ALL MOTOR GENERATORS - 5 KW, 90-135 V (120 NOMINAL) 400 Hz, 3 PHASE  
 DIRECT DRIVE, CONTINUOUS, 120 RPM, 1.5% MAX SLIP, 0.8 POWER FACTOR (LAGGING)  
 ALL CONTROLLERS - 1% REGULATION, 90-135 V RANGE

MG SET	MG ONLY	CONT ONLY	UNIVAC PART NUMBER	MIL-TYPE	COLOR	3Ø INPUT POWER		AUDIBLE NOISE (db)	WEIGHT (L8)	DEPTH LENGTH (INCHES)	WIDTH (IN)	HEIGHT (IN)	SPEC	PRODUCT STATUS*	COMMENTS
						VOLT	Hz FREQ								
1392			911919-00		GREEN										
	1390	1389	-03 PU491 -04 C3414		GREEN	440±44	60±3	75	1100 433	31-3/8 16-3/4	29-3/8 19-1/2	22 58-1/2	OS4511 & OS4610	A	
1392	1390	1389	-01 PU491 -05 C3414		GREY-NAVY	440±44	60±3	75	1100 433	31-3/8 16-3/4	29-3/8 19-1/2	22 58-1/2			
1392	1390	1389	-06 C3414		GREY-NAVY										
	1390	1389	-02 PU491 -07 C3414		GREY-A.F.	440±44	60±3	75	1100 433	31-3/8 16-3/4	29-3/8 19-1/2	22 58-1/2			
1392 LOW NOISE			911920-00		GREEN										
	1390	1389	-03 PU492 -04 C3414		GREEN	440±44	60±3	70	1050 433	38-3/8 16-3/4	22 19-1/2	22 58-1/2	DS4511		
1392	1390	1389	-01 PU492 -05 C3414		GREY-NAVY	440±44	60±3	70	1050 433	38-3/8 16-3/4	22 19-1/2	22 58-1/2			SUBMARINE OUTY
1392	1390	1389	-06 C3414		GREY-NAVY										
	1390	1389	-02 PU492 -07 C3414		GREY-A.F.	440±44	60±3	70	1050 433	38-3/8 16-3/4	22 19-1/2	22 58-1/2			
1394			911921-00		GREEN										
	1393	1391	-03 PU680 -04 C7354		GREEN	208±21	60±3	75	1100 433	31-3/8 16-3/4	29-3/8 19-1/2	22 58-1/2	OS4511 & OS4610		
1394	1393	1391	-01 PU680 -05 C7354		GREY-NAVY	208±21	60±3	75	1100 433	31-3/8 16-3/4	29-3/8 19-1/2	22 58-1/2			
1394	1393	1391	-06 C7354		GREY-NAVY										
	1393	1391	-02 PU680 -07 C7354		GREY-A.F.	208±21	60±3	75	1100 433	31-3/8 16-3/4	29-3/8 19-1/2	22 58-1/2			
1395			911922-00		GREEN										
	1397	1396&1388	-03 PU497 -04 C3501,02		GREEN	208±21	400±20	75	1150 485(80TH)	31-3/8 47-1/2,30-1/2	29-3/8 19-1/2,19	22 16-3/4(EA)			2 CABINET CONTROLLERS MAIN CONTROL & AUXILIARY
1395	1397	1396&1388	-01 PU497 -05 C3501,02		GREY-NAVY	208±21	400±20	75	1150 485(80TH)	31-3/8 47-1/2,30-1/2	29-3/8 19-1/2,19	22 16-3/4(EA)			
	1397	1396&1388	-06 C3501,02		GREY-NAVY										
1395	1397	1396&1388	-02 PU497 -07 C3501,02		GREY-A.F.	208±21	400±20	75	1150 485(80TH)	31-3/8 47-1/2,30-1/2	29-3/8 19-1/2,19	22 16-3/4(EA)			
	1397	1396&1388	-08 C3501,02		GREY-A.F.									A	

\*A = ACTIVE

MOTOR GENERATOR (MG) SETS (MANUFACTURER - KATO)

MG SET	MG ONLY	CONT ONLY	UNIVAC PART NUMBER	MIL-TYPE	COLOR	3Ø INPUT POWER		OUTPUT POWER				RPM	SLIP	AUDIOIBLE NOISE (db)	WEIGHT (LB)	DEPTH LENGTH (INCHES)	WIDTH (IN)	HEIGHT (IN)	SPEC	PRODUCT STATUS**
						VOLT	Hz FREQ	ADJUST RANGE	KW KVA*	VOLT	Hz FREQ									
1384	1385	1386	7902510-03 -04 -05		GREY-NAVY	440	60	90-135	5/6.25	90-135	400	1200	1.5% MAX	75	1100 406	37-3/4 16-3/4	30-2/5 19-1/2	26-1/2 58-1/2	S810112	A
1381	1382	1383	7902510-00 -01 -02		"	208	60	90-135	5/6.25	90-135	400	1200	1.5% MAX	75	1100 406	37-3/4 16-3/4	30-2/5 19-1/2	26-1/2 58-1/2	↓	
1387	NO TYPE #	NO TYPE #	7900298-00 -01 -02	PU609/UYK	"	220/440	60	98-132	3/3.3	115	400-420	3428	2.5%	85	350 165	28-3/4 12	15-3/16 26-1/2	17-1/2 30	S810004	
1546	1546	NONE	7901546		"	208-220/440	60	-	3/3.3	115	400-420	3428	2.5%	85	350	27-5/8	14-1/4	17-3/16	DS4869	
1547	NO TYPE #	1533	7901572-00 -01 -03	PU655/U C8086/U	"	208-220/440	60	98-132	5/6.25	115	400-420	3428	2.5%	85	350 227	31 12	17-3/4 27	17-1/2 36	OS4872	
NO SET #	NO TYPE #		7901729		"	208-220/440	60	-	5/6.25	120	400-420	3428	-	85	750	30-3/8	17-3/4	17.3	↓	
8503-00	NO TYPE #	NO TYPE #	7901048-00 -02 -03		"	208-416	50	98-132	7.5/9.3	115	390-400	-	-	85	430 150	36-7/8 12	26-1/2 26-1/2	24-5/8 30	-	
8503-01	NO TYPE #	NO TYPE #	7901048-01 -04 -05		"	208-416	60	98-132	7.5/9.3	115	410-420	-	-	85	430 150	31-5/16 12	16-1/8 26-1/2	17-1/2 30	-	
NO SET #	NO TYPE #	NO TYPE #	7901048-06 -04 -07		"	208-416	60	98-132	7.5/9.3	115/208	410-420	-	-	85	430 150	31-5/16 12	16-1/8 26-1/2	17-1/2 30	-	A

NOTE: FOR ALL MG's - 3 PHASES, DIRECT DRIVE, CONTINUOUS OUTY

FOR ALL CONTROLLERS - 1% REGULATION

\* KW = POWER FACTOR MULTIPLIED BY KVA

\*\* A = ACTIVE

7.5 VQ9W/15 HX7F

M/G-1-3

MOTOR GENERATOR (MG) SETS (MANUFACTURER KATO)

MG SET	MG ONLY	CONT ONLY	UNIVAC PART NUMBER	MIL-TYPE	3Ø INPUT POWER		DUTY	OUTPUT POWER				RPM	AUDIOIBLE NOISE (db)	WEIGHT (LB)	DEPTH LENGTH (INCHES)	WIDTH (IN)	HEIGHT (IN)	SPEC	PRODUCT STATUS*
					VOLT	HZ FREQ		ADJUST RANGE	VOLT	KVA	KW	HZ FREQ							
X	X		7901484-00 -01	PU671/U	400	50/60	CONT		115/208	25/62.5	20/50	400/60	1500/ 1800	100	6300	59-1/2	68		A(S)
		X	-04	C7161/U				±10%						2500	24	30	70		
X	X		7901547-00 -01	PU672/U	200-220	60	CONT		115	25	20	400	1200	85	3200	58	38	35-1/16	
		X	-02/03	C7162/U				±10%						1200	-	30/60	97		
X	X		NONE ASSIGNED 7902486-00 -01		380	50	CONT		208/115	50/62.5	40/50	60/400	1500	95	6700	125-7/8	47-1/8	41	
		X	-02					±10%						1200	24	30	73		
X	X		7902730-00 -01	PU698/U	440	60	-		120	37.5	30	400	1200	-	1715	49-5/8	26-5/8	25-5/8	SB10009
		X	-02	C7724/U				90-135						400	14	19-1/2	58-1/2		
X	X		NONE ASSIGNED 7902730-03 -04	PU698/U	380	50	-		120	37.5	30	400	1500	-	1715	49-5/8	26-5/8	25-5/8	SB10240
		X		C7724/U				90/135						400	14	19-1/2	58-1/2		A(S)

NOTE: FOR ALL MG's - 3 PHASE, 0.8 PWR FACTOR  
FOR ALL CONTROLLERS - 1% REGULATION

\*A(S) = ACTIVE - SPECIAL PROJECT DESIGN